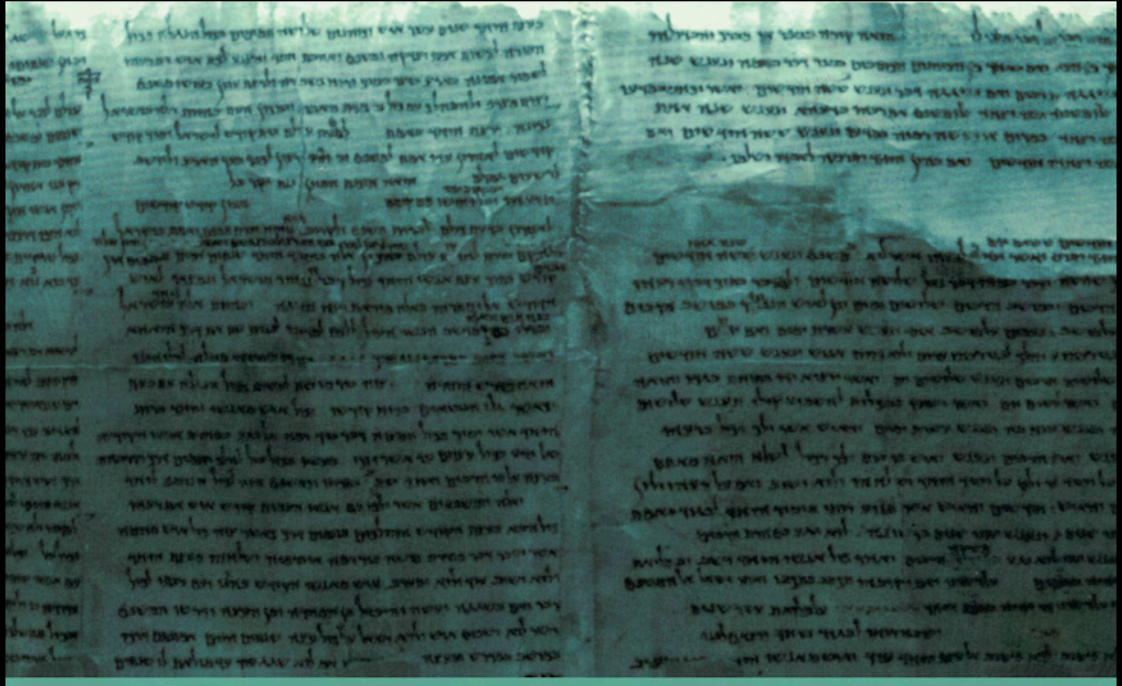

THE DEAD SEA SCROLLS

CALENDARS IN THE DEAD SEA SCROLLS: MEASURING TIME

JAMES C. VANDERKAM

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CALENDARS IN THE DEAD SEA SCROLLS

Since the photographs of the Dead Sea Scrolls were released in 1991, there has been an explosion of interest in them. *Calendars in the Dead Sea Scrolls* explores the evidence about the different uses of time-measurement in the Dead Sea Scrolls, the Hebrew Bible and other ancient Jewish texts. James C.VanderKam examines the pertinent texts, their sources and the different uses to which people put calendrical information in the world of Judaism and Christianity. He argues that the scrolls indicate that a dispute about the correct calendar for dating festivals was one of the principal reasons for the separation of the author of the scrolls from normal Jewish society.

James C.VanderKam is professor of Hebrew Scriptures at the University of Notre Dame. He is the author of *The Dead Sea Scrolls Today* (Eerdmans 1994).

This new series, *The Literature of the Dead Sea Scrolls*, provides in six volumes an overall introduction to the principal kinds of literature amongst the Dead Sea scrolls. Since all the unpublished texts came into the public domain in 1991, there has been much scholarly activity in editing the materials. However, little has been published to provide the interested student with a concise guide to the complete extant literary corpus. This new series aims to fill that gap through its popular presentation of the main ideas and concerns of the literature from Qumran and elsewhere in the Judaean wilderness.

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CALENDARS IN THE DEAD SEA SCROLLS

Measuring time

James C.VanderKam

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CONTENTS

Series editor's preface vi

Preface vii

Part I
Introduction to Biblical and post-biblical Calendars

1 THE HEBREW BIBLE 2

2 SOURCES LATER THAN THE HEBREW BIBLE 12

3 RABBINIC LITERATURE 26

Part II
The calendars in the Qumran texts

4 THE FIRST CALENDRICAL HINTS 32

5 A HISTORY OF SCHOLARSHIP ON THE QUMRAN CALENDARS 39

6 THE CALENDRICAL TEXTS 53

7 MEASURING AND SYMBOLIZING LONGER UNITS OF TIME 68

8 CONCLUSIONS 82

Notes 87

Bibliography 93

Index of subjects 98

Index of references 102

SERIES EDITOR'S PREFACE

The Literature of the Dead Sea Scrolls is a six-volume series designed to provide introductions to the principal literary genres found among these very important texts. From the outset the intention behind the series has been to focus on the texts themselves, before trying to assert what their historical or theological significance might be. The series treats principally the finds from the eleven caves at Qumran, but some other contemporary texts found in the Judaean wilderness in the last fifty years are also considered.

In 1991 all the unpublished manuscripts from Caves 4 and 11 at Qumran became available to the scholarly world at large and to the general public. Much has been done to incorporate all the new information into scholarly debates about Jewish religion and history in the late Second Temple period, but little of the overall significance of the whole literary corpus has been put in the public domain. A major aim of this series is to step back from the debates about the history and identification of the community or movement respon-sible for writing or preserving these manuscripts. In so doing, entirely fresh consideration can be given to the literary corpus as a whole within the context of Jewish literature of the three centuries before the fall of the temple in 70 CE. On such fresh and newly constructed foundations firmer opinions can be offered about the importance of the scrolls for emerging forms of Judaism and for nascent Christianity.

It is important for those interested in Jewish history and religion of this period to have access to the primary resources, the texts, for themselves, so that anybody can make up their own minds about them. However, some of the textual evidence is very fragmentary and difficult to assess, some of it is entirely new evidence in the discussions. Students of all kinds need straightforward guides to the literature to enable them to trace a secure path through the mass of material. It is not the purpose of this series to provide detailed translations and commentaries on individual texts, though in some chapters of some of the volumes in the series this is the case. Though small extracts and quotations are often given, to make the most of what is written in each volume readers will need to have access to one of the standard translations of the Dead Sea scrolls in English. Nor is the purpose of the series to cover every single text. But the general reader will find here a valuable and up-to-date companion to the principal literary genres found in the scrolls.

Such companions as these may be especially useful to those studying similiar genres in related fields such as the Hebrew Bible, the New Testament, or Jewish halakhah, so, that those too are not studied in isolation from this extensive literary corpus which provides so much insight into the development of genres in the period.

I am grateful to my colleagues in the field of Dead Sea scrolls research who have taken the time to contribute to this worthwhile venture and to the editors at Routledge, especially Richard Stoneman, for the enthusiastic welcome given to this series and its individual volumes.

George J.Brooke

PREFACE

Calendars in the Dead Sea Scrolls: Measuring Time summarizes and analyses the calendrical information in the Qumran texts and attempts to place it within a larger historical framework. A more comprehensive survey of this kind has become possible only in the last few years, with the release of all the photographs of the previously unpublished Dead Sea Scrolls. Work on the monograph has provided opportunity to revise some earlier studies I had written and also to advance into new areas. There is good reason for believing that a calendrical dispute was one factor that led the Qumran community to separate itself physically from the rest of Jewish society. For them the calendar was not simply a convenient tool; rather, the correct reckoning of time was divinely revealed, and conducting one's life according to it had been mandated by God himself in prediluvian times.

I wish to thank Professor George Brooke for inviting me to contribute this volume to the Routledge series *The Literature of the Dead Sea Scrolls* and for his helpful comments and suggestions as the manuscript was taking shape. I also wish to express appreciation to Coco Stevenson, Jody Ball, and Sarah Brown of Routledge for their work in guiding the manuscript to publication and to Michael Anderson for his careful and efficient work in compiling the indexes for the book.

James C.VanderKam
Notre Dame
June 25, 1998

Part I
INTRODUCTION TO BIBLICAL AND POST-BIBLICAL CALENDARS

Before turning our attention to the calendrical information that comes from the Dead Sea scrolls, it is very useful to have before us some idea about calendars in ancient Israel and early Judaism. This provides a helpful background against which to view the data from the Dead Sea scrolls because the authors of those texts consciously based their time reckonings upon the ancient Scriptures. Surveying the sources outside the scrolls also shows what was known about ancient Jewish calendrical thought before the scrolls were discovered.

1
THE HEBREW BIBLE

The Hebrew Bible, the earliest surviving collection of Israelite—Jewish writings, includes no document that could be called a calendar as we think of calendars today. As a matter of fact, the Bible provides little information about calendars, yet it does offer some givens that have necessarily played a role in all subsequent Jewish calendrical calculation. Several of the key passages should now be adduced and their value for the topic at hand assessed.

IMPORTANT PASSAGES

The creation account in Gen. 1:1–2:4a

Much is said already in the priestly creation story of Genesis 1. The paragraph devoted to the fourth day in the creative week reads:

> And God said, 'Let there be lights in the dome of the sky to separate the day from the night; and let them be for signs and for seasons and for days and years, and let them be lights in the dome of the sky to give light upon the earth.' And it was so. God made the two great lights—the greater light to rule the day and the lesser light to rule the night—and the stars. God set them in the dome of the sky to give light upon the earth, to rule over the day and over the night, and to separate the light from the darkness. And God saw that it was good. And there was evening and there was morning, the fourth day.
>
> (1:14–19)[1]

The paragraph establishes that God is in control of the heavenly luminaries: they themselves are not personified or deified as they were in some neighboring cultures. Also, he assigns duties to both sun and moon (the stars are mentioned later) during each day: they are meant for signs, seasons, days, and years. The term translated "seasons" *(mw'dym)* is one that elsewhere in the Bible means "festivals". Therefore, one could say that in this paragraph the sun and moon are given calendrical assignments for three of the entities that are significant in Biblical and post-Biblical calendars—days, years and festivals. The religious festivals were carefully dated and thus regularly mentioned in connection with the calendar and, of course, days and years are two of the fundamental elements in any system for measuring time. It is interesting that neither sun nor moon is actually named here: they are merely described as the greater and lesser lights. From these verses we could conclude that in biblical reckoning of time both sun and moon had

to be considered. Both were created by God, and to both he gave calendrical functions. Note that at the end of the paragraph, regarding day four, we meet the refrain "there was evening and there was morning", a sequence that seems to say something about when the writer thought the day began (see below).

The flood story

A second passage in Genesis has also figured prominently in subsequent calendrical thought. Of all the stories in the first book of the Bible, the flood narrative has the highest density of specific dates, all of which fit within slightly more than a one-year span and all of which designate the months by ordinals (see below on this system for naming months). The text relates that Noah was 600 years of age when the flood waters fell on the earth (Gen. 7:6, 11). The dates mentioned in the Hebrew text are the following (dates are expressed as month/date in the month):

600th year of Noah's life

2/17 the waters come (7:11)

7/17 the ark rests on one of the mountains of Ararat (8:4), 150 days after the deluge started (7:24; 8:3)

10/1 the tops of the mountains appear (8:5)

601st year of Noah's life

1/1 the waters are dried up and Noah removes the covering of the ark (8:13)

2/27 the earth is dry

The careful reader of the story will notice that the months are assumed to contain thirty days because five months (2/17–7/17) are said to total 150 days. These would not be the standard lunar months of the later Jewish calendar because such months had either twenty nine or thirty days in them, and it would have been virtually impossible to have five consecutive months of thirty days each. It has been suggested, although the text does not specifically say, that the year began in the autumn in the flood calendar as that is when the rains come in the Near East. However, we are dealing with unusual rainfall in this case, not a super-sized autumnal rainy season. Since the version of the flood story in which the numbered months are used is the priestly one, and elsewhere in the priestly source the first month is in the spring, it is more likely that the flood calendar also began in the spring. As we will see, the flood story was an important scriptural base for the calendars elaborated in the Book of Jubilees and in at least one of the Dead Sea scrolls.

Scholars have long puzzled over the significance of the report that the flood lasted one year and eleven days (from 2/17 in one year to 2/27 in the next). One hypothesis that has been advanced to explain the numbers is that the flood was believed to have lasted one year but that that single year is expressed in two systems: the basic unit is the lunar year which lasts 354 days, and the eleven additional days are added to arrive at a full solar year of 365 days.[2]

THE MOON AND THE SUN

The teaching of Genesis 1 that both the sun and the moon play a part in marking times is borne out elsewhere in the Bible where both luminaries are mentioned in calendrical contexts.

The moon

The moon served as a primary means for segmenting time in the ancient world. Observation led very early on to the conclusion that the span of time between one new moon (that is, the first time that part of the lunar surface becomes visible after the period of its invisibility) and the next was twenty nine or thirty days. The course of the lunar month could be charted as the percentage of its surface illuminated by the sun increased until the full moon (when the half of the lunar surface visible to the human eye was lighted) and then decreased to the point of invisibility.

Genesis 1 is not the only biblical passage that recognizes the role of the moon in measuring time. For example, in Ps. 104:19 the poet, as he praises the wondrous works of the Lord in creation, sings: “You have made the moon to mark the seasons; the sun knows its time for setting”. Here again the term translated “seasons” is the one that can also refer to festivals. If the psalmist understood the term to mean “festivals”, he did not specify which holidays were marked by the moon, but it is clear that he did not assign a similar role to the sun. The writer may have had in mind the two great festivals that take place exactly half a year apart—the holidays of unleavened bread and tabernacles (on these, see p. 10). The seven day Festival of Unleavened Bread began on the fifteenth day of the first month, while the Festival of Tabernacles commenced on the fifteenth day of the seventh month: that is, both began when the moon was full. Ps. 81:3 probably refers to the Festival of Unleavened Bread, a holiday closely tied to the Passover (which was celebrated on 1/14) and exodus from Egypt. It reads: “Blow the trumpet at the new moon, at the full moon, on our festal day”. The fifth verse of this psalm refers to the night of the first Passover, thus suggesting that the full moon of verse 3 is the one on which the Festivals of Passover—Unleavened Bread began.

Several passages in the Bible show that the first day of the month or the new moon was considered a special day. The point emerges clearly from 1 Sam.: 20, one of the stories involving Saul, Jonathan and David. In it we read about the meals—apparently not ordinary ones—that took place on the new moon and the day following. At a time when his relations with Saul had deteriorated badly, David met his friend Jonathan and said to him: “Tomorrow is the new moon, and I should not fail to sit with the king at the meal; but let me go, so that I may hide in the field until the third evening” (v. 5). The term “new moon” is quite understandable, but at this juncture in the story the reader has no clue what the significance of the phrase “until the third evening” might be (see also v. 12). The sequel clarifies the issue. Jonathan and David arranged to meet on the day after the new moon (vv. 18–19). The day of the new moon came and David was absent from the meal (vv. 24–25), but Saul assumed that something had happened to David to disqualify him from what appears to have been a sacred meal (v. 26): “But on the second day, the

day after the new moon, David's place was empty. And Saul said to his son Jonathan, 'Why has the son of Jesse not come to the feast, either yesterday or today?'" (v. 28). Saul's seemingly irrational anger at David's absence—anger directed consequently at Jonathan—had the result that "Jonathan rose from the table in fierce anger and ate no food on the second day of the month, for he was grieved for David" (v. 34). The next morning, that is, on the third day Jonathan met David (v. 35). From this passage it seems that, at least for Saul's household, a two-day celebration marked the arrival of the new moon.

The sacral character of the first of the month also emerges from 2 Kgs. 4:23. This verse appears in the story about the prophet Elisha and the Shunammite woman whose long-awaited child had died. She wanted to go to Elisha quickly to report the news, but her husband replied: "Why go to him today? It is neither new moon nor sabbath". The implication is that one visited a man of God like Elisha on the first of the month or the seventh day of the week. The prophet Isaiah included the new moons with the sabbaths and festivals in his condemnation of insincere worship (1:13–14; cf. Hos. 2:11; Amos 2:5). Sabbath and new moon are also paired in Ezek. 46:1–3. The new moon is not, however, listed in the calendar of festivals in Leviticus 23 apart from the first of the seventh month (Lev. 23:24); yet in a similar passage, Num. 28:11–15, the firsts of each month are included among the "appointed times" of the Lord.

The sun

Although there is no conclusive evidence in the Hebrew Bible that a solar year was known or used (unless the dates for the length of the flood are to be interpreted in this way), the movements of the sun and the related changes of seasons were carefully marked. There are references to the year (a measure that could not ignore the sun), its beginning and end, and major festivals were located near the vernal and autumnal equinoxes. Since several of these holidays were connected with harvest seasons, their proper timing was dependent upon the movements of the sun. The setting of the sun also marked the end of a day in some calculations such as the end of certain periods of impurity.

The role of the sun in marking intervals during the day is expressed in the story of the Lord's promise that he would add fifteen years to the life of King Hezekiah who "became sick and was at the point of death" (2 Kgs. 20:1). The king requested a sign which would guarantee that the Lord would heal him, and the prophet Isaiah then brought the message:

> 'This is the sign to you from the Lord, that the Lord will do the thing that he has promised: the shadow has now advanced ten intervals; shall it retreat ten intervals?' Hezekiah answered, 'It is normal for the shadow to lengthen ten intervals; rather let the shadow retreat ten intervals.' The prophet Isaiah cried to the Lord; and he brought the shadow back ten intervals, by which the sun had declined on the dial of King Ahaz.
>
> (2 Kgs. 20:9–11; cf. Isa. 38:7–8)

It remains the case, nevertheless, that no scriptural statements assert the role of the sun's course in defining a year. Despite its greater size, it seems to be the lesser light in the Bible.

THREE SYSTEMS FOR DESIGNATING MONTHS

Although there are no systematic statements about calendars in the Hebrew Bible, there are three sets of names for the months in a year. The information that accompanies references to these systems allows us to conclude that all the lists began in the spring of the year. While both Leviticus 23 and Numbers 29 allot a special place to the first day of the seventh month (Lev. 23:23–25; Num. 29:1–6), it is never called New Year's Day (Rosh Ha-Shanah) in the Bible. That development seems to have occured at a later time.

Canaanite month names

There are four month-names that are possibly of Canaanite origin. They are:

Abib (Exod. 13:4; 23:15). This is the first month of the year (see 12:2), since it is associated with the exodus from Egypt and the Festival of Unleavened Bread. The name refers to an unripe head on a stalk of grain. See also Deut. 16:1–3.

Ziv 1 Kgs. 6:1, 37 date the inception of Solomon's building activity on the temple to his fourth regnal year in the month Ziv which is explained as the second month of the year.

Ethanim 1 Kgs. 8:2 calls it the seventh month, the month during which the temple was dedicated.

Bul 1 Kgs. 6:38 places completion of the temple project in Solomon's eleventh year in the month of Bul, that is, the eighth month.

It is interesting that these month names appear only in special contexts. Abib is employed only in connection with Passover, and the other three occur only in date formulas in the story about the construction of Solomons temple.

Numbered months

The most common way of referring to the months in the Hebrew Bible is through use of the ordinals first to twelfth. These ordinal designations appear frequently in the priestly source of the Pentateuch. We have seen that numbered months are prominent in the flood story. Another section in which they occur often is 2 Kgs. 25 (=Jeremiah 52) where the last days of Judah before the destruction of Jerusalem are under consideration. Perhaps some sort of chronicle underlies the chapter. It may be noteworthy that "twelfth" is the largest ordinal attested; there is no thirteenth month in the Hebrew Bible and thus no intercalary month in this system.

Babylonian month names

A number of biblical sources employ month names that originated in Babylon; in fact the Jerusalem Talmud preserves the memory that the exiles brought these month names back

with them upon their return from the east (Rosh Ha-Shanah 1.56d). When these names occur in the Bible they are often accompanied by explanatory phrases indicating the ordinal of the month. Not all of the twelve are mentioned in the Bible, but the following seven are and they, with the five missing ones, constitute the Jewish month names to the present. It comes as no surprise that the names appear in books that date from the post-exilic period, when Jewish contact with Babylon and its Persian successor who had adopted the same calendar was immediate.

Nisan (Esth. 3:7; Neh. 2:1). In the former passage it is identified as the first month. Note that both occurrences of the name are in texts set during the Persian period, that is, after 538 and before 333 BCE.

Sivan Esth. 8:9 calls it the third month.

Elul Neh. 6:15 dates completion of the wall to this month (=the sixth month).

Chislev (Zech. 7:1; Neh. 1:1). In Zechariah it is said to be the ninth month.

Tebeth Esth. 2:16 says it is the tenth month.

Shebat Zech. 1:7 terms it the eleventh month.

Adar (Esth. 3:7, 13; 8:12; 9:1, 15, 17, 19, 21; Ezra. 6:15). The book identifies it as the twelfth month. It occurs frequently in Esther because the great events remembered in the festival of Purim occurred during the month Adar.

THE FESTIVALS

Lists and descriptions of festivals are one type of biblical context in which we often encounter references to months and to dates within the months. The different sources of the Pentateuch make their own presentations on this subject (see Exod. 23:10–19; 34:18–26; Deut. 16:1–17), but the fullest lists are now found in Leviticus 23 and Numbers 28–9 (where the sacrifices for the holidays are detailed at considerable length). In these texts from the priestly source, which most scholars have dated to the exilic or post-exilic period but which some claim are pre-exilic, the numbered-month system is used throughout. Before presenting the full list of festivals, it should be said that the priestly lists refer to the weekly sabbaths first (Lev. 23:3; Num. 28:9–10) and Numbers 28 adds a section for the two daily sacrifices (vv. 3–8) and a paragraph about the sacrifices to be presented on the first of each month (vv. 11–15).

Passover (1/14).

Unleavened Bread (1/15–21), a pilgrimage festival.

Weeks (?) On the fiftieth day after the waving of the omer offering which was presented on “the day after the sabbath”, apparently a sabbath after Unleavened Bread [Lev. 23:9–14]); Weeks is a pilgrimage festival.

Day of the Trumpet (7/1).

Day of Atonement (7/10).

Tabernacles (7/15–21 or 22), a pilgrimage festival.

The biblical roster of holidays can be completed by adding the Festival of Purim (=lots) from the book of Esther. It was to be celebrated on Adar=12/14–15. Returning to the priestly texts, Num. 9:1–14 adds a second passover on 2/14 (exactly one month after the regular Passover) for those who were unclean through corpse contamination or who were away on a journey on 1/14. An unexpected point in the festal listing above is the

fact that the Festival of Weeks is assigned no absolute date. It was one of the three pilgrimage holidays when "all your males shall appear before the Lord God" (Exod. 23:17) and was thus presumably of some importance, but, unlike the other two, it is dated only relative to another event—the fiftieth day after the ceremony of waving the omer. Later, the dating of the omer-waving and therefore of the Festival of Weeks became a matter of contention between Jewish groups.

THE GEZER CALENDAR

While the Gezer Calendar is, of course, not part of the Hebrew Bible, it is appropriate to mention it in this context because it is contemporaneous with some of the earliest biblical books. The so-called calendar was discovered in 1908 by R.A.S.Macalister—it is on "a school exercise tablet of soft limestone" and seems to date from "the second half of the tenth century or the very beginning of the ninth" (Albright 1958:209). The text comes from the Israelite period of Gezer's history.

His two months are (olive) harvest,
His two months are planting (grain),
His two months are late planting;
His month is hoeing up of flax,
His month is harvest of barley,
His month is harvest and *feasting;*
His two months are vine-tending,
His month is summer fruit.
(Albright 1958:209)

All twelve months in a year are represented in the lines of the poem (2+2+2+1+1+1+2+1=12). If we follow the sequence of agricultural events that are explicit in the roster of months, it is clear that the calendar begins in the early autumn. Note, for example, that the barley harvest, the first-fruits of which are marked by the barley-waving ceremony in the first month of the year in the priestly list of holidays, occurs in the eighth month of this enumeration.

SOME DEBATED ISSUES

The calendrical data in the Bible are too few or too opaque to allow us any sure inferences about several fundamental questions. Disputed points include the time when the day was thought to begin, the season when the year started, and the system by which longer spans of time were reckoned. It may be that there was more than one answer to these questions, depending upon time, place, and literary source.

The beginning of the day

One can easily point to sets of statements in the Bible (none of which is meant to be a scientific assertion) that suggest that the day began in the evening, and one could isolate others that imply that it began in the morning. For example, the formulaic line in the Genesis 1 creation story "And there was evening and there was morning, the xth day" has been understood to imply that for the writer the day began in the evening (it is mentioned first). However, other exegetes take it to entail that the next day begins in the morning. A similar case is found in Dan. 8:14 which refers to "two thousand three hundred evenings and mornings" (cf. Esth. 4:16; 2 Cor. 11:25). It seems most likely that both Genesis 1 and Daniel 8 assume that a day starts with the evening, not with the morning. Ps. 91:5–6 points in the same direction:

> You will not fear the terror of the night,
> or the arrow that flies by day,
> or the pestilence that stalks in darkness,
> or the destruction that wastes at noonday.

Then there are other passages which suggest a different view. For instance, in 1 Sam. 30:12 an Egyptian whom David's troops detained had had nothing to eat or drink "for three days and three nights" (see also Isa. 28:19, "by day and by night"; Jer. 33:20).[3] Or Ps. 121:6 reads: "The sun will not strike you by day, nor the moon by night". Exod. 29:39, which deals with the two daily offerings in the sanctuary, says: "One lamb you shall offer in the morning, and the other lamb you shall offer in the evening" (cf. Deut. 28:67; 1 Chr. 16:40; 23:30).

In dealing with such an issue for which the evidence is ambiguous or inadequate, it may be more useful to ask which groups of people would find such a distinction important and for what purposes, since for most it would presumably matter little whether the night or day were regarded as the first part of what for us is a twenty four-hour unit. But one group that attached importance to having a fixed point for beginning the day was the priests, as can be seen from the fact that festivals, periods of purification, and the like began or ended at the specific time when one day ended and another began. Some of the festivals commenced in the evening when a new day was starting. Legislation for the day of Atonement, which was to be observed on 7/10 (Lev. 23:27), includes the peculiar prescription "on the ninth day of the month at evening, from evening to evening you shall keep your sabbath" (Lev. 23:32). Or, Exod. 12:18 stipulates regarding Passover-unleavened bread: "In the first month, from the evening of the fourteenth day until the evening of the twenty first day, you shall eat unleavened bread."

Another type of case consists of those laws that required waiting until evening for a certain condition to end. Several examples are mentioned in Numbers 19. In the paragraph about the sacrifice of the red heifer, the priest who officiates at the burning of the animal is to "wash his clothes and bathe his body in water, and afterwards he may come into the camp; but the priest shall remain unclean until evening" (19:7). The person who burns the heifer and the one who gathers up its ashes must follow a similar regimen (vv. 8, 10). In other words, for many cultic purposes the day began in the evening. There

may have been exceptions, however, since, as we have seen, for the two daily offerings at the sanctuary the priestly legislation mentions the morning one first, then the one at twilight (see also Num. 28:4; see Lev. 11:24–8; 15:1–12, 16–24; 22:1–9). In Neh. 13:19 the sabbath begins as darkness fell. In general it may be said that in the second temple period (after *c.* 520 BCE) almost all cultic texts assume that the day began in the evening.

The beginning of the year

As with the inception of the day, the biblical data about the beginning of the year are ambiguous, with some evidence suggesting an autumnal beginning and other indicators pointing to a vernal new year. A new year in the autumn is suggested by passages that depict the Festival of Booths (which was celebrated from 7/15–7/21 or 22) as falling at the turn of the year. Exodus 23:16 speaks of two harvest festivals occuring after the Festival of Unleavened Bread (which was treated in the previous verse): "You shall observe the festival of harvest, of the first fruits of your labour, of what you sow in the field [= the Festival of Weeks]. You shall observe the festival of ingathering at the end of the year, when you gather in from the field the fruit of your labour [= the Festival of Booths]." The same conclusion emerges from Exod. 34:22: "You shall observe the festival of weeks, the first fruits of wheat harvest, and the festival of ingathering at the turn of the year [=the Festival of Booths]." It should be said, however, that these are references to the agricultural cycle that of course ended with the harvest in autumn—a matter that is not the same as saying that the annual calendar ends at that point (Clines 1974:29).

Other passages, however, locate the beginning of the year in the spring. As we have seen, all three systems of month names begin in the spring, and Exod. 12:2 explicitly associates the vernal Festival of Passover with the first month: "This month shall mark for you the beginning of months; it shall be the first month of the year for you". Moreover, the festal calendars in Leviticus 23 and Numbers 28–9, once they begin listing the annual holidays, also start with Passover in the first month. As we shall have chance to observe, four new year's days are recorded much later in the Mishnah.

Longer time spans

There is no explicit chronological system that covers the entire history that the Hebrew Bible records—that is, there is no reference to a system into which most periods fit. Moreover, there is no explicit allusion to a chronological framework within which the reigns of Israel's and Judah's kings belonged. This is not to say that there is no overall chronology underlying the entire Hebrew Bible; it is only implying that there is no clearly enunciated system of this kind in the scriptural text.

One modest span of time is marked by the system of sabbatical years (seven year periods) and a longer one by the years of jubilee (the fiftieth year, that is, the year after seven sabbatical cycles). It is known from later sources that the seventh-year legislation was practiced, but there is no mention of a jubilee year being observed. The sabbatical year principle is employed in Daniel 9 to work out a chronology for the period "from the time that the word went out to restore Jerusalem" (9:25) until the attack by the troops of a prince. The time in question was the post-exilic period until the time of the author; here

Jeremiah's prophecy of seventy years for the desolation of Jerusalem was interpreted to mean seventy weeks of years, or 490 years. The historical period was from 538 BCE to the mid-160s BCE; the sabbatical principle here seems to have won out over historical accuracy. Mention should also be made of the 430 years in which, according to Exod. 12:40, the Israelites had lived in Egypt and the 480 years which, in 1 Kgs. 6:1, spanned the time from the exodus to the beginning of the project to build Solomon's temple.

2
SOURCES LATER THAN THE HEBREW BIBLE

In the Jewish literature written after the books of the Hebrew Bible or, in some cases, contemporary with the latest books in it there is at times a higher concentration of calendrical references.

ELEPHANTINE PAPYRI

The earliest relevant literature comes from a Jewish military colony stationed on the island of Elephantine opposite the city of Syene in Upper Egypt. Aramaic papyri found at the site and coming mostly from the late fifth century BCE contain many dates (often double dates from different systems) that allow us to draw some conclusions about the calendars that were employed by the inhabitants in their letters, contracts, and other official documents. B.Porten has recently surveyed all the relevant evidence from Egyptian Aramaic texts, whether from, or dealing with, Jews or related to people of another race. He organizes the dates in the documents into three categories: those with exclusively Egyptian dates; those with exclusively Babylonian dates; and those which have synchronized double (Babylonian and Egyptian) dates. He surveys twenty one texts with Egyptian dates alone. Among these are four letters that are written between Jews. The category of texts using Babylonian dates alone is smaller but again, in some cases, they are employed by Jews. In these texts the month names Nisan, Sivan, Tammuz, Marcheshvan, and Tebet appear. The double-date category is the largest (about thirty texts). In them the Babylonian date always comes first, and all the Babylonian month names occur except Tebet. Porten concludes from the data that “there is no evidence for a Jewish calendar at Elephantine as distinct from the Babylonian calendar” (Porten 1990:32). It is interesting that the Jewish people whose lives are reflected in the papyri employed the calendars in use in the cosmopolitan context in which they lived. The Egyptian calendar was a solar one of 360 days plus five epagomenal or extra days tacked on to the end of the year. The Babylonian system (which the Persians adopted) was a lunar arrangement that was adjusted with an intercalary month seven times in nineteen years.

One of the papyri deserves special attention because it mentions the Festival of Unleavened Bread and does so in an intriguing context. The so-called Passover Letter is a document from Hananiah to Jedaiah and the Jewish troops. The letter contains a command from King Darius, apparently Darius II (424–404 BCE), instructing the Jewish group to count fourteen days (part of the number has to be restored), to observe something; it also mentions days fifteen to twenty one. Work is forbidden, as is drinking some sort of beverage, and leaven is named as an item to be gathered and sealed up. That

the holidays in question are Passover and Unleavened Bread becomes a necessary implication from the reference to Nisan in the same letter. The Persian monarch is thus presented as mandating observance of the Jewish holidays in the month Nisan on the biblically prescribed dates, although he naturally substitutes the month name Nisan for the first month, or Abib as it is called in Exodus.

THE SAMARIA PAPYRI

A group of papyri were discovered in a cave in the Wadi ed-Daliyeh in 1961. They date from between *c.* 375/365 and 335 BCE, that is, from the last period of Persian rule in Palestine. The texts copied onto the papyri are contracts and thus carry the specific dates when the contracting parties executed the documents. Although the papyri are in very poor condition, several of the date formulas are preserved in part at least. For example, papyrus 1 specifies the date of the agreement as "the twentieth day of Adar, year 2 (the same being) the accession year of Darius the king" (Cross 1974:19). Other papyri preserve the month names [Tebe]t (papyrus 2), Sheba (papyrus 6), and Adar (payrus 7). Thus all the preserved names are ones familiar from the Babylonian list of months that is attested already in later books in the Hebrew Bible. It seems, then, that the Samarian authors of these contracts, at least for the purpose of such legal documents, used the luni-solar months of the surrounding world.

ENOCH 72–82

The earliest Jewish text offering systematic statements about calendars is the Astronomical Book of Enoch found in chapters 72–82 of 1 Enoch. It is of special interest in this context not only because of its extensive treatment of calendrical topics but also because it brings us into the thought world that would later be represented in many of the Dead Sea scrolls. In a sense, 1 Enoch 72–82 may serve as a bridge between the evidence available before the Qumran discoveries and the Dead Sea scrolls themselves in that an Ethiopic translation of the work had been accessible for more than a century before 1947, but fragments of the original Aramaic version of the book were subsequently identified amid the myriad scraps from cave 4. The booklet also offers us our first opportunity to observe the theological role that calendars were thought to play in connection with God's orderly creation. Measuring units of time was not simply a matter of convenience; rather, it was a moral issue involving obedience to divine revelation about the nature of reality and the laws by which the world operated.

The early date at which the Astronomical Book was written has become apparent from the fragmentary copies of it from cave 4. The first editor of them, J.T.Milik, identified four copies of the Astronomical Book and dated them as follows (Milik 1976:7, 273–4):

4QEnastr^{a} end of the third or beginning of the second century BCE.
4QEnastr^{b} early in the first century CE.
4QEnastr^{c} middle of the first century BCE.
4QEnastr^{d} second half of the first century BCE.

The likelihood that the first copy was made close to the year 200 BCE and was not the original penned by the author implies that the Astronomical Book was written no later than the third century BCE. The dates for the other manuscripts indicate that the tediously long work continued to be copied throughout the centuries when a community inhabited the Qumran area.

The Qumran copies of the Astronomical Book have provided modern scholars with their first glimpses of what the original text of the book looked like. These glimpses are exceptionally important because the Astronomical Book, which was written in Aramaic, has had a long textual history. It was translated into Greek, but the Greek version (with the possible exception of a few lines) has been lost. A Greek copy of the book was then translated into Ge'ez, the classical language of Ethiopia, where the book continued to be copied for centuries. In a sense it is true to say that the only complete version of the book is preserved in the Ethiopic language, but the real state of affairs is more complicated. The most complete version is the one written in the Ethiopic language; nevertheless, the Qumran Aramaic copies, although they are very fragmentary, have shown that the Ethiopic version of the Astronomical Book is an abbreviated one, especially at the beginning and, to a lesser extent, at the end. In the intervening sections as well it is often not a literal rendering. Milik has summarized the situation in these words:

> The majority of the fragments, those of Enastr[a] in their entirety and the great majority of those of Enastr[b], belong to an elaborately detailed and monotonous calendar in which the phases of the moon, day by day, were synchronized with the movements of the sun in the framework of a year of 364 days; the calendar also described the movements of the two heavenly bodies from one 'gate' of the sky to another. This part of the work no longer exists in the Ethiopic version. Enastr[b] and Enastr[c] contain passages which correspond to various paragraphs of the third section of the Ethiopic [that is, of the Astronomical Book], but in a much more developed form. Enastr[d] provides remains of the final part of the work, a part which is also lost in the Ethiopic tradition.
>
> (Milik 1976:7–8)

There is no choice but to consult the Ethiopic for most of the text because it is the only surviving witness, but the Aramaic fragments point to a different form of the book, a far more expanded one.

The first section (extant in Aramaic fragments only)

Of the two sources for this section, the first and oldest copy of the Astronomical Book (4QEnastr[a]) has not yet been published while much of the second manuscript (4QEnastr[b]) was made available in Milik's *The Books of Enoch*. The first section of the booklet contains, according to Milik, a full synchronization of the movements of the moon and sun in a year of 364 days. The Astronomical Book proves to be the earliest, unambiguous witness to the count of 364 days in a solar year—a calculation that ancient astronomers would have known was incorrect. Yet it is presented in the book as if it was information gained by revelation. The Aramaic fragments of 4QEnastr[a-b] that supply the first part of

the text are actually a table in narrative form. Milik believes that the table continued giving the information for each day through three complete years—the amount of time in which the lunar and solar years would be thirty days apart. The two could then be brought into harmony by intercalating one thirty-day month into the lunar calendar. Much of the mass of information in them can be organized into six sections that are repeated for each day of each month tabulated. The pattern involves dividing the half of the lunar surface facing the earth into fourteen parts which are either illuminated or in darkness in specific proportions on each day. In the first part of the tabulation for a month the number of fourteenths of the lunar surface that are lit increases from one (the new moon) to fourteen (the full moon in a hollow month, that is, one of twenty nine days) and in the second part decreases from fourteen to one. The gates that are mentioned are also dealt with in connection with the sun (see pp. 20–1): there are twelve of them, six in the east and six in the west. As an example, Milik translates parts of 4QEnastr^{b} in this way:

> And at the (beginning of) night twenty five of this (month, the moon) is covered to five seventh (parts of its light, i.e.) five seventh (parts) are subtracted from its light. And then it emerges (from the same gate as on the preceding days) and shines during the rest of this night with two seventh (parts of its light); and it waxes during this day up to five sevenths and a half (of its light). And then it sets [and] enters the second gate and it is covered during the rest of this day to one seventh (part) and a half (of its light).
>
> (4QEnastr^{b} 7 ii 6–8; Milik 1976:280–1)

Milik doubts that the text would have continued in such detail for every day of years two and three of a three-year cycle, since according to his estimate, the data for year one alone would fill some twenty seven columns. He believes that the author "must have confined himself to some kind of summary, the remains of which, mishandled by the translators, are contained in En. 74:10–17 and 79:3–5" (Milik 1976:275). Milik considers 4QEnastr^{b} 7 iii 1–2 to be a key passage for interpreting the text, probably because it refers to the motions of both moon and sun and in this way shows that the two were under consideration in this long section:

> [And (the moon) shines in night eight of] this (month) with four sevenths. And then it sets and enters (the same gate as before.) During this night the sun completes the passage (across) all the sections of the first gate, and it begins again to go and come out through these sections (i.e. of the first gate).[1]

By comparing the location of the sun relative to the gates as explained in 1 Enoch 72, he concludes that the passage refers to the end of the ninth solar month and the beginning of the tenth: "Now, the first day of the tenth solar month, in a year made up of 364 days, falls exactly on the eighth day of the tenth lunar month (the eighth Tebet) in a lunar year composed alternately of months of thirty and of twenty nine days." (Milik 1976:283).[2]

1 Enoch 72 (the sun)

The Ethiopic version begins with a statement about the context and content of the Astronomical Book:

> Book on the Motion of the Luminaries of the Heaven, how each of them stands in relation to their number, to their powers and their times, to their names and their origins and their months, as the holy angel Uriel, who is their leader, showed to me when he was with me. And he showed to me their whole description as they are, and for the years of the World to eternity, until the creation will be made anew to last for ever.
>
> (72:1)[3]

The introductory sentence shows clearly that the book will be concerned with all of the luminaries—sun, moon, and stars—and the unchanging laws that govern their movements. These laws are to remain in effect as long as the world endures. The verse mentions a new creation but says nothing about what role the luminaries might play in it. It is important to emphasize that the information given to Enoch is not merely the result of his personal observation of nature; rather, the data in the Astronomical Book come by direct revelation from the angel Uriel whose name means "God is my light" and who is in charge of the luminaries.

The remainder of 1 Enoch 72, none of which is represented in the Aramaic fragments but which could perhaps be inferred from the contents of the opening section in the first two Aramaic copies, offers another tabular set of data in narrative form. Its message can be stated quite simply and illustrated by charts. Chapter 72:2–5 describes the twelve gates which are found in the heavens, six in the east and six in the west; the sun, carried on a chariot driven by the winds, is said to rise from the former group and to set in the latter. During the night it returns to the east by way of the north. It turns out that the moon and stars, too, proceed through these gates and that there are many windows to the right and left of the gates. Neugebauer has suggested that the windows are for the stars (Neugebauer 1985:393).

The list-like section begins with verse 6 and continues until verse 32. Quoting a few lines from it gives a clear impression of the contents:

> When the sun rises in the sky it rises from this fourth gate (during) thirty days; and the sun sets exactly in this (fourth) gate in the west. And in these days the day increases over the (preceding) day and the night decreases from the (preceding) night during thirty days. And on this (thirtieth) day the day is two-ninths, (i.e. two) 'parts', longer than the night, the day being exactly ten parts and the night exactly eight parts. And the sun rises from the fourth gate and sets in the fourth (gate).
>
> (Then) the sun moves to the fifth gate in the east, for thirty days, and it rises from it and it sets in the fifth gate. And then the day increases two parts and the day amounts to eleven parts and the night decreases and amounts to seven parts.
>
> (72:8–12)

The pattern continues through verse 32, with the sun pictured as moving from gate to gate and the parts of day and night changing accordingly. Neugebauer has reduced the information found in these verses to a table (Neugebauer 1985:393).

month	1 *in gate*	4 *during*	30 *days, ending in*	10^{p} *of daylight*	8^{p} *of night*
	2	5	30	11	7
	3	6	31	12	6
	4	6	30	11	7
	5	5	30	10	8
	6	4	31	9	9
	7	3	30	8	10
	8	2	30	7	11
	9	1	31	6	12
	10	1	30	7	11
	11	2	30	8	10
	12	3	31	9	9

The twelve-month scheme of this calendar is divided into four units of three months each in which the first two months have thirty days each and the third has thirty one (the term used for it is “its sign” or, as Neugebauer translates, “its [the gate’s] characteristics [for the season]”; see, for example, verse 13). The total number of days is 364 in the solarly determined year. As the sun moves through the sequence of gates, the length of the times of light and darkness in a day varies. The measurement used is a set of “parts” that number eighteen. The summer solstice occurs in the third month when daylight lasts twelve parts and darkness only six: this implies that the calendar begins in the spring. The winter solstice occurs in month nine, while the equinoxes are in months six and twelve. This system of twelve parts may suggest a Babylonian origin for the calendar (Neugebauer 1985:394–5).

After 1 Enoch 72:33–6 makes general comments on the material presented in the list section, the chapter concludes with verse 37: “And it rises and similarly it sets and it does not diminish (in brightness) and it does not rest, but travels day and night. And its light is seven times as bright as the (light of the full) moon but with respect to their size the two are equal”. This may be one case in which the Astronomical Book cites Scripture because the thought here is reminiscent of Isa. 30:26. In the context the prophet Isaiah speaks of how the Lord will be gracious to his people in the future:

> Moreover the light of the moon will be like the light of the sun, and the light of the sun will be sevenfold, like the light of seven days, on the day when the Lord binds up the injuries of his people, and heals the wounds inflicted by his blow.

Neugebauer correctly points out that the Isaianic passage “deals with some future events in the universe” (Neugebauer 1985:396 n. 11) but, as commentators on 1 Enoch have long noted, the relative brightnesses of the two celestial bodies are the same in the two

texts. Perhaps the writer of 1 Enoch 72 thought the verse from Isaiah pointed to a sevenfold increase in the light of both sun and moon from their more limited brilliance in the present.

1 Enoch 73–74

Chapter 73 centers around the moon (called in v. 1 "the smaller luminary," words reminiscent of Gen. 1:16) and its movements. It, too, is said to move on a chariot driven by winds (v. 2; cf. 72:5). The writer again recalls the thought of Isa. 30:26 by saying that "when its light is evenly spread (over its disc) then it amounts to one seventh of the light of the sun" (v. 3). This point is important for understanding some of the proportions mentioned later in the chapter.

1 Enoch 73:4–8 contains what appears to be a truncated form of a report parallel to the one for the sun in chapter 72—that is, it begins describing the movements and illumination of the moon as if the author planned to do so for a complete unit of time (a month or a year perhaps), but the description breaks off after the second day. Its character may be gleaned from 73:4–6:

> And thus (the lunar month) begins, when (the moon) itself moves away (from the sun) toward east on the thirtieth day, and (when) on this day it becomes visible it is for you the beginning of the (lunar) month on the thirtieth day, (when the moon is setting) together with the sun in the gate from which the sun rises, (but) at a distance (from the sun) of half of a seventh part.
>
> And its whole disc is empty (i.e.) without light, excepting its seventh part of a fourteenth part (i.e. 1/98) of the light (of the sun).
>
> And on (this) day (the moon) takes on a seventh part of one half (i.e. 1/14) of its light, and (thus) its light is the seventh of a seventh part and one half of it (i.e. 1/98 of the light of the sun).

What is depicted here is the beginning of a lunar month (which happens, of course, at night) after a month of twenty nine days (the new moon is visible on the thirtieth day of the month being completed). The moon moves through the same gates as the sun. The writer operates with different percentages: the amount of the lunar surface that is illuminated, and that amount as a percentage of the solar light, assuming that the light of the moon is one-seventh that of the sun. As Neugebauer puts it (speaking of vv. 4–8):

> In these verses we have a fragmentary description of a linear scheme for the increasing illumination of the moon during the first half of the lunar month. This increase is expressed in two scales: first, in absolute terms from 1^p to 14^p (hence proportional to the illuminated area), and, second, in terms of solar brightness, hence increasing from $1/14 \cdot 1/7 = 1/98$ on the first day to 1/7 at full moon (cf. 73, 3)
>
> (Neugebauer 1985:397)

It would be quite understandable if a scribe chose to reproduce only a small segment of the full listing of days in such a cumbersome system. Whatever the correct explanation for the origin of the abbreviated reading in the Ethiopic text, the surviving data show that the moon, like the sun, moves in a systematic, chartable way without altering its course. As nature does not change, so the calendar is unalterable.

The moon is also the subject of 1 Enoch 74. Here the moon's motion through the gates comes under consideration, although the sun is also mentioned. The subject concerns how the moon produces the cycle of months (v. 1), but the author takes the opportunity to remind the reader that the data in his composition come from a uniquely authoritative source: "Uriel, the holy angel, who is the leader of all of them" (v. 2). The same verse indicates that a full moon is reached on the fifteenth of the month, unlike the pattern suggested in chapter 73. The technical details in the chapter (vv. 5–8) concern the number of days during which the moon rises from each gate in the east and prove to be very difficult to interpret. Consider vv. 7–8:

> And when the sun rises from the fourth gate, (the moon) comes out (from the sixth gate) during seven days, until it rises from the fifth (gate) and it returns again during seven days to the fourth gate and it completes its light and it recedes (from the sun) and it enters the first gate (during) eight days. And again it returns (after) seven days to the fourth gate from which the sun rises.

Neugebauer (1985:400) suggests that the scheme for the month in question would look something like this:

gates:	4	5	6	5	4	3	2	1	2	3	4
	sun				sun						sun
days:	[2]	[2]	7	[2]	[1]	[1]	[2]	8	[2]	[1]	[1]

At least the text says that for seven days the moon rises in one place (the sixth gate in Neugebauer's scheme) and it takes another seven days until it reaches gate four where the full moon occurs; this time it is followed by eight days in the first gate and seven more for the return to the fourth gate. These numbers total twenty nine days, unless the full moon is considered another day, in which case the month would have thirty days. The scheme has the moon in the end gates (one and six (if Neugebauer is correct)) for seven and eight days respectively, while the return to the middle gate in both cases occupies seven days.

1 Enoch 74:10–17 is a curious section that Neugebauer terms "some correct but irrelevant numerical identities, based on the comparison of 5 + 3 Enoch years with 5 + 3 lunar years" (Neugebauer 1985:401). For some reason the writer informs the reader of the number of days separating the solar and lunar calendars in one, three, five, and eight years—a number that is obvious as the solar year is always ten days longer than the lunar year. To this point the reader has learned repeatedly that a solar year has 364 days, while a lunar year has 354 days. However, a new number appears on the scene in 74:10–11:

> *And (if)* five years are added together, the sun has an excess of thirty days; but all the days (which) accrue to it for one year of those five years, when they are complete, amount to three hundred and sixty four days. And the excess of the sun and the stars comes to six days; in five years, six (days) each (year), they have an excess of thirty days, and the moon falls behind the sun and the stars by thirty days.[4]

The thirty-day surplus enjoyed by the solar year in a five-year span presupposes that it is six days longer each year than the entity with which it is being compared. Since the moon must be the luminary whose annual cycle is being set alongside that of the sun, the longer year with which it is being compared must be one of 360 days. The number thirty for the excess days could be dismissed as a scribal blunder, but it is repeated in verse 11 and confirmed by the information offered in 75:1–2:

> And their leaders, at the head of (each) thousand (stars), who are appointed (to rule) over the whole creation and over all stars (have to do also) with the four additional (days), without deviating from their positions, corresponding to the computus of the year. And they render service (also) on these four days which are not counted in the computus of the year.
>
> And with respect to these (four days) people err since these luminaries do true service (also) in the (following) positions of the cosmos: once in the first gate and once in the third gate and once in the fourth gate and once in the sixth gate, so that the accuracy (of return) of the world is achieved after 364 (days) (with respect to the) positions of the cosmos.

That is, the four days which are the distinctive trait of the schematic solar calendar in 1 Enoch are additional in some sense; the base year to which they are added at fixed intervals (in months three, six, nine, and twelve) is one of 360 days. The reason why it is said that they are not counted in the computation of the year is that they "would disturb the linearity of the scheme for the variation of the length of daylight" (Neugebauer 1985:402) as it is presented in chapter 72 (cf. 82:4–7).

Most of the remaining parts of the Astronomical Book deal with topics which are not, strictly speaking, astronomical in character. For example, chapters 75 and 76 speak about gates in various places, mythical geography, and the like. Chapter 78 is an exception in that it reverts to the topic of lunar phases; but it largely repeats the information found in chapters 73 and 74 (cf. chapter 79). As we will see, the calendrical data of the Astronomical Book were used by the community that resided at Qumran as they drew up their calendrical documents.

Before leaving the Astronomical Book it is worth noting a few items that are missing from the text. The book never mentions the festivals of the Bible. Never once is the sabbath named, nor is Passover or any other holiday. Thus, dating of the religious festivals was not a concern of the author. In fact, he never refers to the seven days in a week. As he places the solar and lunar years side by side, he seems to have been more interested in setting forth their natures and the fact that they follow the divine law without deviating for a moment. Consequently, the Astronomical Book is quite different from the

biblical texts which mention dates in connection with the festivals and which place great emphasis on the sabbath. As we will see, the situation is considerably different in the Book of Jubilees.

Finally, it should be added that 1 Enoch 80:2–8 constitutes a paragraph so different from other parts of the booklet that scholars often consider the verses a supplement to the original text. The other parts of the book declare that the laws imposed by God on the natural world will remain valid as long as the universe endures, but in 80:2–8 it is claimed that the course of the moon will be altered in the days of the sinners and the same fate will befall the stars which the sinners will worship. Thus these seven verses connect moral failure on the earth with stellar disobedience to God's laws. Other sections of 1 Enoch contrast the regularity of nature with human disobedience, but here both people and the luminaries deviate from the path created for them.

SIRACH

After the time when the Astronomical Book was composed, there is little information about calendrical topics in Jewish texts until the time when the Book of Jubilees was written. Sirach, a work authored in *c.* 175 BCE, does emphasize the role of the moon in relation to the festivals. In chapter 43 the poet praises the heat of the sun but assigns it no calendrical function (43:2–5). Of the moon, however, he writes:

> It is the moon that marks the changing seasons,
> governing the times, their everlasting sign.
> From the moon comes the sign for festal days,
> a light that wanes when it completes its course.
> (43:6–7)

Sir. 50:6 mentions "the full moon at the festal season", perhaps in reference to pilgrimage Festivals of Unleavened Bread and of Booths, both of which began on the fifteenth of a month. It is safe to say on the basis of these references that the moon, not the sun, plays the decisive role in connection with the holidays for the author.

THE BOOK OF JUBILEES

As with 1 Enoch, the Dead Sea scrolls have made large-scale contributions to scholarship on the Book of Jubilees. Jubilees explicitly offers itself as a divine revelation. According to Jub. 1:26–9 an angel of the divine presence read the revelations from heavenly tablets to Moses who thus wrote them down by dictation. The angel's disclosures turn out to be a highly nuanced retelling of the biblical stories from Genesis 1 to, approximately, Exodus 20. It is likely that a Jewish priest wrote Jubilees around the mid-second century BCE. A total of fifteen or sixteen copies of the book, all in Hebrew, have been identified in caves 1, 2, 3, 4, and 11 at Qumran.[5] Jubilees, like the Astronomical Book, sets forth a 364-day solar calendar, but it differs from the older work regarding several important calendrical issues.

The first hints that the author considered the correct reckoning of times to be extremely important—a fundamental part of the covenantal relationship—already surface in the first chapter which serves as a homiletic introduction to the rewritten biblical stories that follow. Among the sins that the Lord predicts Israel will commit is the abandonment of the festivals of the covenant and the sabbaths (1:10). He foretells that they will "err regarding the beginning of the month, the sabbath, the festival, the jubilee…" (1:14).[6] It isdifficult to imagine what going astray for the first day of the month might involve unless the author and his circle calculated it differently than others did.

As one might expect, the fourth day of the creation week when the heavenly luminaries were made was an opportunity seized by the author and exploited for his ends. The Bible assigns calendrical tasks to both the sun and the moon. But our author who, as we will see, rejected any calendrical function for the moon, rephrased Gen. 1:14 to read: "The Lord appointed the sun as a great sign above the earth for days, sabbaths, months, festivals, years, sabbaths of years, jubilees, and all times of the years" (2:9). This is the first clue in the book that the writer's views differ sharply from those of the person who wrote the Astronomical Book and who incorporated the moon into his schemes for measuring time.

The next passage which is significant for the present purposes occurs in the paragraph about Enoch, the seventh antediluvian patriarch (4:17–25; cf. Gen. 5:21–24) whom the writer presents as the pioneer in astronomical matters:

> He was the first of mankind who were born on the earth who learned (the art of) writing, instruction, and wisdom and who wrote down in a book the signs [cf. Gen. 1:14] of the sky in accord with the fixed pattern of their months so that mankind would know the seasons of the years according to the fixed patterns of each of their months…. The weeks of the jubilees he related, and made known the days of the years; the months he arranged, and related the sabbaths of the years. …They [=the angels] showed him everything on earth and in the heavens—the dominion of the sun—and he wrote down everything.
>
> (4:17, 18, 21)

Much of the subject matter summarized here can be found in the Astronomical Book (the signs of the sky, the fixed pattern of the months, the seasons, the days and months, and the dominion of the sun); weeks of jubilees (that is, seven periods of forty nine years each) and sabbaths of the years (seven-year units; cf. Lev. 25; Dan. 9), however, are not part of 1 Enoch 72–82 and therefore must have come from another source.

While for the author of Jubilees Enoch was the first human to know about the calendrical and chronological subjects mentioned above, he saved a more complete statement of the details in his calendar for the flood story which functioned as the basis for establishing the structure of the calendar and for communicating its details. As has already been noted, the biblical flood pericope has an unusually large number of exact dates; it became the literary platform on which the author of Jubilees chose to display the data of his solar calendar.

Dates that appear in Jubilees' flood account (5:22–6:1) are as follows:

Year of the world	*Event*
1307	Noah builds an ark
1308	Noah and others enter the ark, from 2/1–2/16 2/17 the Lord closes ark and the flood begins Month 4 the sources of deep closed, etc. 7/1 the sources of deep opened 10/1 mountain peaks become visible
1309	1/1 the earth becomes visible 2/17 the earth is dry 2/27 the ark is opened 3/1 Noah builds an altar and concludes a covenant

From these dates the writer builds the calendar and draws inferences about festivals.

1 Jub. 6:23: the first days of months one, four, seven, and ten "are memorial days and days of the seasons. They are written down and ordained at the four divisions of the year as an eternal testimony." These dates served as reminders for Noah of the events that had occurred on them (6:24–7). It should be noted that these four memorial days, which are at the beginning of each quarter, are not the same as the four days that are added at the end of each three-month period in the 364-day calendar of the Astronomical Book of Enoch.
2 Jub. 6:28–9: the four memorial festivals (1/1; 4/1; 7/1; 10/1) divide the year into four units of thirteen weeks each.
3 Jub. 6:30: the weeks in a year number fifty two.
4 Jub. 6:32: "Now you [=Moses] command the Israelites to keep the years in this number—364 days. Then the year will be complete and it will not disturb its time from its days or from its festivals because everything will happen in harmony with their testimony".

In another move that differentiates it from the Astronomical Book, Jubilees, here and elsewhere, gives a prominent place to sacred festivals. It comes as a surprise that within the flood story the Festival of Weeks receives a significant amount of attention (6:10–22). The first biblical mention of this pilgrimage festival comes much later than the life of Noah—it is first mentioned during Moses's career (Exod. 23:16; 34:22)—but Jubilees introduces it already in Noah's time. The author antedates the festival so drastically because he assigns a special role to it in connection with the covenant. The Bible indicates that the Lord and Noah with his sons entered into a covenant after the flood (Gen. 9:1–17). If we follow the chronology of the biblical flood story, Noah leaves the ark on 2/27 (8:14), that is, very near the end of the second month, and the covenant follows. Jubilees places Noah's exit from the ark on 3/1, thus ensuring that the covenant would be made in the third month. The third month of the year was also the time when the covenant on Mt Sinai was made centuries later (see Exod. 19:1). The author of Jubilees seizes on this coincidence and makes the third month the time for making and renewing the covenant. The Bible indirectly dates the Festival of Weeks to the third month (see pp. 10–11); hence, for Jubilees, it became the festival of the covenant. The

importance of correctly dating the festivals and thus not confusing profane and sacred times emerges clearly from 6:32–8.

While the coincidence of Noah's covenant with the third month may have provided the most obvious reason for introducing the Festival of Weeks into the flood story, another motivation may have been the central role that this holiday played in dating a series of festivals in the sacred calendar. As shown above, the biblical calendars assign no specific date to the Festival of Weeks. The nearest one comes to a date for it occurs in Leviticus 23 where it takes place on the fiftieth day after the ceremony of waving the omer of barley (23:15–16) which itself occurred "on the day after the sabbath" (23:11) after Passover. We know from rabbinic sources (the targums and the Mishnah, for example) that there was a debate about the meaning of "on the day after the sabbath". Did it mean that the omerwaving ceremony was to take place on the day after the weekly sabbath following Passover (Passover falls on 1/14)? Or did "sabbath" mean any day on which there was no work, such as the first or seventh day of the Festival of Unleavened Bread (1/15 or 1/21) so that 1/16 or 1/22 could be the point from which the fifty-day count began?[7] Jubilees, which dates the Festival of Weeks to the middle of the third month (3/15), shows that there was another way to interpret "on the day after the Sabbath": for it the sabbath in question is the weekly sabbath but it is the one that falls after completion of the Feast of Unleavened Bread, that is, 1/25 in its system. The fiftieth day after 1/26 in the Jubilees calendar is 3/15 (see 15:1; 44:4–5). As seen in connection with the Temple Scroll, these dates are the basis for calculating those of two other first-fruits holidays.

Jubilees' calendrical statements are straightforward and seemingly unambiguous, but a quick glance at the history of pre-Qumran scholarship on the book shows the confusion that reigned. Part of the problem involved establishing the date of the Festival of Weeks or Pentecost. As we have seen, there are several explicit indicators in the book that prove that it was celebrated on 3/15, and in the 364-day system (thirty days in all months except numbers three, six, nine, twelve which have thirty one) this would entail that the omerwaving ceremony (Lev. 23:9–16), from which the fifty-day count toward Pentecost began, took place on 1/26 (that is, the fiftieth day before Pentecost). That starting point, however, seems to have posed a problem for earlier scholars. In fact, even R.H.Charles, who correctly worked out most of the details in the system, apparently could not imagine that the sabbath in question was any other than 1/21, and concurred with A. Epstein that there were two calendars in Jubilees, a civil and a sacred system, both of which totaled 364 days: "The civil year consisted of twelve months…of thirty days each and four intercalary days…, one at the beginning of each quarter. The ecclesiastical year consisted of thirteen months of twenty eight days each, and in accordance with it were regulated the great festivals, the Sabbaths, the Passover, and Feast of Weeks…".[8] Charles and Epstein thought that the count from the omer-waving to Pentecost must have begun on Nisan (the first month) 22.[9] While the count adds up in their system, the book does not even hint that there were thirteen months of twenty eight days each in the year; all indicators point to eight months of thirty days and four of thirty one, just as in 1 Enoch 72–82.

Jubilees agrees with the Astronomical Book of Enoch for many details of the 364-day calendar, but it disagrees completely in its assessment of lunar calculations. People who observe the movements of the moon and incorporate them into their calendar reckonings are liable to

> forget the covenantal festivals and walk in the festivals of the nations, after their error and after their ignorance. There will be people who carefully observe the moon with lunar observations because it is corrupt (with respect to) the seasons and is early from year to year by ten days.[10] Therefore years will come about for them when they will disturb (the year) and make a day of testimony something worthless and a profane day a festival. Everyone will join together both holy days with the profane and the profane day with the holy day, for they will err regarding the months, the sabbaths, the festivals, and the jubilees.
>
> (6:35b-37)

1 Enoch simply presents the two calendars and juxtaposes them; Jubilees advocates the solar and condemns the lunar system. Apparently the latter became a problem in the period between the composition of 1 Enoch 72–82 and that of Jubilees, that is, between the third century BCE and *c.* 160–150 BCE. One reason may be that the Hellenistic lunar calendar(s) had come to exert a stronger influence on Jewish calendation, possibly even including the dating of sacred festivals. The Book of Daniel may imply that such a calendar was imposed on the Jewish cult in 167 BCE as part of Antiochus IV's decrees abolishing the practice of Judaism (Dan. 7:25; see p. 114).

As he attaches his calendrical essay to the flood story, the author of Jubilees explains which events during the flood were to be recalled on the four "memorial days and days of seasons" (6:23; see pp. 29–30). They were to serve as reminders of: 1/1 (when Noah was told to make the ark and a year later the earth became dry); 4/1 (the openings of the abyss were closed); 7/1 (the openings of earth's depths opened); 10/1 (the summits of the mountains became visible) (6:24–27.) The writer draws attention to the four quarters of the year, each of which consists of thirteen weeks so that the year contains fifty two weeks (6:29–30). Throughout this section there are no instructions for intercalation.

In the remainder of the long book the writer often dates events according to the 364-day calendar which he presumably inherited from the Enochic tradition. Jubilees differs from the Astronomical Book by laying heavy emphasis upon weeks and by tying the calendar directly to the festivals. In other words, it appears to be an attempt to bring the Enochic solar calendar into direct contact with the biblical tradition of sabbaths and holidays. It dates not only the Festival of Weeks but also Passover, the Festival of Unleavened Bread (Abraham was the first to celebrate it, 18:18–19), the Day of Atonement (it originated with Jacob's grief on learning of the "death" of Joseph, 34:17–19), and the Festival of Booths (also celebrated by Abraham, 16:20–31). There is also reason to believe that the writer considers the evening to be the beginning of the day—at least the chronology in the story about the near-sacrifice of Isaac in chapter 18 can be explained by this assumption. In his chronology he shows interest, too, in longer periods of time: weeks of years (seven years), jubilees of years (forty nine years), and multiples of jubilees. In fact, the author informs the reader that the full chronology of the book covers exactly fifty jubilee periods of forty nine years each, that is, 2,450 years (for a fuller analysis of this topic, see pp. 101–2, chapter 7).

3
RABBINIC LITERATURE

There are no systematic statements about calendars in the Jewish literature written between Jubilees and the Mishnah (*c.* 200 CE). The month names that were used in the Hellenistic world naturally occur in Jewish writings in the Greek language (for example, 1–2 Maccabees). We should not overlook the fact that the Books of Maccabees do make an important contribution to the festal calendar in that they introduce the festival of Hanukkah. The eight day holiday was first celebrated in connection with the rededication of the temple in 164 BCE, after it had been profaned for some years as a result of Antiochus IV's decrees against Judaism. The participants in the celebration decreed that Jews should observe the same eight days every year after this (1 Macc. 4:36–59). The eight days of Hanukkah, which begin on Chislev (the ninth month) 25, are perhaps modeled on King Hezekiah's rededication of the temple in 2 Chr. 29. It is interesting that 2 Macc. 1:9; 10:8 designate it the Festival of Booths (another eight day holiday) in the month of Chislev. Writers such as Josephus often made comments touching on the calendar, but one can learn little from them. Josephus used Jewish, Macedonian, and Roman month names at many places in his writings, and in the New Testament again there are occasional calendrical references which reproduce biblical givens (for example, in the passion accounts in which the festivals of Nisan are prominent). For more detailed information we have to turn to rabbinic literature.

The vast compilations of rabbinic thought and traditions known as the Mishnah and Talmuds offer far more information about the Jewish calendar. The following is a very brief sketch of some of the data. In order to understand the presentation of calendrical traditions in this book, it must be remembered that the rabbinic writings are later than the Dead Sea scrolls, sometimes by centuries. They are surveyed here simply to provide background information and to indicate what was known about Jewish calendars before the scrolls were discovered.

MEGILLAT TA'ANIT

The date when Megillat Ta'anit was first composed and the time when it was put into final form are not known, but it is widely thought that it comes from the first or second century CE. It is a list of important dates in Jewish history; on the anniversaries of those occasions fasting was forbidden or, as the first line says: "These are the days on which one is not to fast, and on some of them one is not to mourn".[1] This early rabbinic text is interesting from a calendrical point of view because it proceeds through the year, starting with Nisan and ending with Adar, and it is the first surviving Jewish text to name all twelve of the months in order:

1 Nisan
2 Iyyar
3 Sivan
4 Tammuz

5 Ab
6 Elul
7 Tishri
8 Marcheshvan
9 Chislev
10 Tebet
11 Shebat
12 Adar

THE MISHNAH

The Mishnah, an ordered collection of rabbinic opinions, discussions, and decisions concerning a wide variety of legal issues, was complied by Judah the Prince in *c.* 200 CE. It thus contains material that antedates 200 CE and it is our earliest collection of texts that express rabbinic views on the matters treated. A number of passages in the Mishnah provide information about calendrical subjects. As we will see, in places the authorities draw a distinction between practices in their own time and those that were in place when the second temple still stood. It soon becomes evident from the Mishnah that at the time of the traditions it records, the calendar was not calculated or fixed in advance and that determining the day on which a new month began was a major concern. The decision about the new moon was based on evidence for sighting the lunar crescent brought by eligible and reliable witnesses. Lunar months contained either twenty nine or thirty days, and if the appropriate authorities—in this case the court—determined that the new moon had indeed been seen, that day was declared the first in the new month. In this way the previous month was also defined as one of either twenty nine or thirty days. It goes without saying that fixing the day of the new moon would determine when any festival which occurred in that month would take place.

Tractate Rosh Ha-Shanah (the New Year)

The group that made the binding decision about the new moon was a court. For example, the tractate Sanhedrin 1.2 reads (in a context where the number of judges required for different kinds of cases is under discussion): "The intercalating of the month and the intercalating of the year [are decided upon] by three. So R.Meir. But Rabban Simeon b. Gamaliel says: The matter is begun by three, discussed by five, and decided upon by seven; but if it is decided upon by three the intercalation is valid."[2] Rosh Ha-Shanah adds other details. "The chief of the court says, 'It is hallowed!' and all the people answer after him, 'It is hallowed! It is hallowed!'" (2.7). Or, we read in 3.1: "If the court itself and all Israel had seen the new moon and the witnesses had been examined, yet night fell before they could proclaim 'It is hallowed!' then it is an intercalated month."

The same tractate reports that the witnesses who had seen the lunar crescent gathered in Jerusalem in a large courtyard called Beth Yaazek; there the court went through the procedures by which it examined them (2.5). We learn that large meals were prepared for the witnesses so that they would be encouraged to come; they were also permitted some

freedom of movement in the general area. One paragraph describes how the witnesses were examined:

> The pair which comes first they examine first. They bring in the elder of the two and say to him, 'Tell us how thou sawest the moon: facing the sun or turned away from it? to the north or to the south? how high was it? to which side was it leaning? and how broad was it?' If he said, 'Facing the sun', he has said naught. Afterward they bring in the second witness and examine him. If their words are found to agree their evidence holds good. The other pairs of witnesses were asked [only] the main points, not because there was need of them, but that they should not go away disappointed and that they might make it their habit to come.
>
> (2.6)

It is reported that, as time went on, there were developments in the rules governing the witness. So, 2.1 says that if "the witness was not known [to the judges] another was sent with him to testify of him. Beforetime they used to admit evidence about the new moon from any man, but after the evil doings of the heretics they enacted that evidence should be admitted only from them that they knew". Rosh Ha-Shanah even sets forth a list of types of individuals who were ineligible to serve as witnesses: "a dice-player, a usurer, pigeon flyers, traffickers in Seventh Year produce, and slaves. This is the general rule: any evidence that a woman is not eligible to bring, these are not eligible to bring" (1.8). Also, in earlier days evidence about the new moon could be brought throughout the day. But on one occasion:

> the witnesses tarried so long in coming that the Levites were disordered in their singing;[3] so it was ordained that evidence could be admitted only until the afternoon offering. And if witnesses came from the time of the afternoon offering onwards, then this day was kept holy and also the morrow was kept holy. After the Temple was destroyed Rabban Johanan b. Zakkai ordained that they might admit evidence about the new moon throughout the day.
>
> (4.4)

The tractate contains other statements to the effect that it was permissible to violate the limit on the length of sabbath travel in order to bring evidence about the sighting of the new moon (see 1.4, 5, 9). Permission of this kind shows the great importance attached to defining the month correctly, a fact on which the proper celebration of festivals and presentation of offerings depended.

The news concerning the declaration of a new month was conveyed across distances in different ways. The tractate relates that at first the practice was to communicate the news by means of flares. They were made by combining wood and flax; these were lit and waved from the top of a hill. The act of waving continued until the next person in the chain of communication waved his flare to indicate he had received the message (2.3). However, at some point something seems to have gone awry: "Beforetime they used to kindle flares, but after the evil doings of the Samaritans they enacted that messengers

should go forth" (2.2). Apparently messengers also conveyed the announcement about the new moons for the months of Nisan and Tishri; 1.4 mentions that on them messengers went to Syria so that the important festivals that occurred during those two months would fall on the correct days.

It is worth adding that the Mishnah preserves evidence about the variations that could occur in the results of the observational system for intercalating months. In Arakhin 2.2 we find: "There are never less than four 'full' months in the year, nor do more than eight months require to be taken into account". That is, each year had to have at least four and no more than eight full or thirty-day months.

Intercalation of the year

A second calendrical concern was intercalation of the year. If the lunar month averaged 29.53 days,[4] twelve lunar months totaled *c.* 354 days. The solar year, however, lasted approximately 365.25 days. Therefore, on average, the lunar year fell short of the solar year by 11.25 days per year. Since the Jewish festivals were tied directly to the seasons which are determined by the course of the sun, the lunar and solar years had to be brought into correspondence by adding days to the shorter lunar year from time to time. Mishnah Nedarim 8.5 refers to the added month and to the first Adar. That is, by this time the practice was to intercalate a second month Adar, a thirteenth month which directly followed Adar—the twelfth month—and had the same name. This may not always have been the case or perhaps in some years exceptional circumstances dictated other measures. For example, a Baraita to Mishnah Pesahim 8.4 (=Babylonian Talmud Pesahim 56a) records among three actions by King Hezekiah with which authorities disagreed: "He intercalated Nisan with Nisan—they did not consent" (Danby 1933:141 n. 7). However, the Mishnah reflects the actual and regular practice of a second Adar only. So m. Megillah 1.4 says: "If they had read the Scroll [of Esther] in First Adar, and the year was intercalated, they must read it again in Second Adar. First Adar differs from Second Adar only in the reading of the Scroll and in giving gifts to the poor" (see also Yebamoth 16.7; Baba Metzia 8.8; Arakhin 9.3). Eduyoth 7.7 conveys something of the timing of intercalary decisions and the identity of the authority who made them:

> They testified that the year could be declared a leap-year any time during Adar; whereas it had been taught: Only until Purim. They testified that the year could be declared a leap-year conditionally. Once Rabban Gamaliel went to have authority given him from the governor in Syria, and he was long in returning; so they declared the year a leap-year on the condition that Rabban Gamaliel should approve; and when he returned he said, 'I approve'; and so the year was reckoned a leap-year.

The passage shows that the decision about declaring a leap year could be postponed almost to the last minute; practical considerations, not calculations, determined whether a year would be supplemented by an additional thirty days.

The so-called Metonic system according to which an extra month was intercalated seven times in a nineteen year period was known to Greek and Babylonian experts already in the pre-Hellenistic period and perhaps was known among Jews as well. The

Christian polymath Julius Africanus (early third century) was quoted by the church historian Eusebius as saying that both the Greeks and the Jews intercalate a moon three times every eight years (Eusebius, *Demonstration of the Gospel* viii.2, 54). But, although Jewish officials probably operated within such a theoretical framework, practical considerations seem to have been decisive in the matter of intercalating years, as far as we can tell. The basic principle seems to have been that Passover, a festival necessarily held in the spring, had to fall after the vernal equinox. The point is not stated in the Mishnah but was articulated by a Christian scholar and churchman named Anatolius, head of the church in Laodicea. His report on this issue has been preserved by Eusebius in his *History of the Church* vii. 32, 16–19. Eusebius says that Anatolius had reached the pinnacle in various fields including astronomy (vii.32, 6):

> These writers [Philo, Josephus, Aristobulus, among others], when they resolve the questions relative to the Exodus, say that all equally ought to sacrifice the passover after the vernal equinox, at the middle of the first month; and that this is found to occur when the sun is passing through the first sign of the solar, or, as some have named it, the zodiacal cycle. And Aristobulus adds that at the feast of the Passover it is necessary that not only the sun should be passing through an equinoctial sign, but the moon also.
>
> (vii.32, 17)[5]

It seems likely that this principle was also operative at a much earlier time, since Anatolius claims that Aristobulus, a Jewish philosopher of the early Ptolemaic period, also taught it. His reference to Josephus and Philo can be shown to be consistent with their writings on the subject, thus showing that the principle was in practice in the first century CE. Josephus says that Passover is celebrated when the sun is in Aries (Ant. 3.10.5).

Some sources suggest the sorts of criteria that had to be met before intercalation of a second Adar was decreed. For example, Babylonian Talmud Sanhedrin 11a says that several indicators alone (kids, lambs and doves were too young) were not sufficient but could assist in the decision; Sanhedrin 11b lists three reasons for intercalating—premature state of the relevant crop, or of fruit trees, or the lateness of the vernal equinox. An oft-quoted excerpt from a letter of the Prince Rabban Gamaliel to Jewish communities in Babylonia and Media reads: “We beg to inform you that the doves are still too tender and the lambs still too young and that the crops are not yet ripe. It seems advisable to me and to my colleagues to add thirty days to this year” (Sanhedrin 11b).[6]

Part II
THE CALENDARS IN THE QUMRAN TEXTS

Now that we have completed our survey of the biblical and post-biblical evidence about Jewish calendars the stage is set for turning to the Dead Sea Scrolls. 1 Enoch and Jubilees have already supplied an introduction to the calendrical traditions in which the scrolls belong. Those scrolls now become the focus of our study.

4
THE FIRST CALENDRICAL HINTS

INTRODUCTION

The initial discovery of scrolls in the region of Khirbet Qumran was made by Bedouin shepherds in 1947, apparently in the spring. The story of their discovery and how they eventually made their way into the hands of scholars is a complicated but familiar one. The major part of these discoveries consisted of seven completely or largely preserved scrolls which were made available for study relatively early. The seven scrolls and their dates of publication are:

1 Isaiah[a] (1950)
2 Isaiah[b] (1954)
3 Pesher Habakkuk (1950)
4 Genesis Apocryphon (1956)
5 Rule of the Community (1951)
6 War Scroll (1954)
7 Hymn Scroll (1954)

For the present purposes, since our focus is on calendars, the biblical copies are irrelevant (although a verse or two from Isaiah was mentioned in chapter 1 about biblical calendars), and what survives of the Genesis Apocryphon lacks any calendrical details. The other texts, however, contain comments and sections suggesting that the religious calendar was a matter of no small significance to their authors. A supplement to the information from the four remaining scrolls comes from a text that scholars have named the Damascus Document, a work that was found in the Geniza of the Old Ezra synagogue in Cairo in 1896 and was published in 1910 by Solomon Schechter. Similarities between the Damascus Document and scrolls such as the Rule of the Community were immediately evident, and the connections between the Damascus Document and the Qumran scrolls have since been documented by discovery of many copies of the Damascus Document in several of the caves. A series of passages in Pesher Habakkuk, the Rule of the Community, the War Scroll, the Hymn Scroll, and the Damascus Document suggested to scholars that calendrical issues were important for the authors and that they held views on the subject that conflicted with the opinions of others. These passages are presented and discussed in this chapter, and chapter 5 sketches the earliest expert reactions to the calendrical statements of these five works and to a smattering of others that were slowly becoming available for scrutiny. It should become clear that while no explicit statements about the exact contours of the Qumran calendar(s) were found in these scrolls, they contain enough details and hints to whet the appetite and to permit some well documented conclusions.

CALENDRICAL INFORMATION IN THE FIRST SCROLLS AND THE DAMASCUS DOCUMENT

Pesher Habakkuk

Well before any Qumran text that mentioned the 364-day calendar was deciphered scholars had already inferred that the group behind the scrolls adhered to a calendar that differed from the one regulating the festivals elsewhere among Jews. Of the scrolls found in cave 1, the text that provided the first clue was a passage from Pesher Habakkuk (1QpHab 11:4–8) which describes a conflict between the Wicked Priest, the arch enemy of the Qumran covenanters and probably a reigning high priest, and the Teacher of Righteousness, who was an early, authoritative leader of their community. At this point the part of Habakkuk under consideration is 2:15: "'Alas for you who make your neighbors drink, pouring out your wrath until they are drunk, in order to gaze on their nakedness *[m'wryhm]*!'". The last word was read by the commentator as *mw'dyhm* = their festivals, thus allowing for a connection with a holiday:

> Its interpretation concerns the Wicked Priest who pursued the Teacher of Righteousness to consume him with the ferocity of his anger in the place of his banishment, in festival time, during the rest of the Day of Atonement. He paraded in front of them, to consume them and make them fall on the day of fasting, the sabbath of their rest.[1]

S.Talmon noticed that the dating of this event to the Day of Atonement strongly implied that the two leaders followed different calendars, for, if the Wicked Priest was a high priest as seems likely, he could hardly be chasing opponents miles away on a holiday during which he had heavy responsibilities in the Jerusalem temple and on which all types of labour including travel were forbidden. (Talmon 1951:549–63). Talmon rejected A.Dupont-Sommer's thesis that the event in question was Pompey's capture of Jerusalem in 63 BCE. From the text he inferred:

> The Sect's Day of Atonement did not coincide with the official Fast and had therefore no binding force for the 'Wicked Priest'. We might even conjecture that the Moreh Hassedek [= the Teacher of Righteousness] and his adherents repaired to a hidden place in order to keep their Fast in the proper fashion, unmolested by their opponents. The exclusiveness of the Holy Day, incumbent only upon the Sect, is possibly expressed in the personal pronoun of *ywm wm šbt mnwhtm* 'on the Fast-day, the Sabbath of *their* rest'.
>
> (Talmon 1951:552)

The Habakkuk Pesher therefore supplied evidence that the Teacher's group and their opponents followed different calendars in which the Day of Atonement (and presumably the other holidays as well) was observed on different days.

The Rule of the Community

Calendrical assertions in a work such as the Rule of the Community should bear special weight because the text appears to have served as a sort of constitution or basic rule for the group that copied and kept the Dead Sea scrolls. In column 1, in a context in which the writer is spelling out what the righteous person, a member of the group, is supposed to do, he includes the rule that he was to comply "with all revealed things concerning the regulated times *[mw'dy]* of their stipulations" (lines 8–9). The words mean that the biblical legislation ("revealed things") concerning the festivals was to be obeyed. A few lines later it reads that those who entered the group (entered the covenant) "shall not stray from any one of all God's orders concerning their appointed times; they shall not advance their appointed times nor shall they retard any one of their feasts" (1:13–15). Here the term "times" (three different Hebrew words are used for it) again points to holidays, and the law is that they are not to be celebrated either too early or too late but at precisely the time God commanded for them. It seems unlikely that any Jew at the time, whether inside or outside the Qumran group, would have condoned celebrating, say, Passover on any date other than 1/14; as a result, a statement about advancing or delaying festivals probably points to a different concern and perhaps to different calendars. If one group followed one calendar and another a divergent one, their festivals would probably fall on different days. The Qumran group would have considered anyone who did not date the festivals by their calendar as advancing or delaying the revealed times for them. Thus it is not surprising to read in 3:9–10 that each member of the group was to "steady his step in order to walk with perfection on all the paths of God, conforming to all he has decreed concerning the regular times of his commands".

The last part of the Rule of the Community is a section giving rules for conduct by the *Maskil* (Master) and includes a poem in which he blesses God. The poem is introduced by a paragraph about the times when he should offer his benedictions; the poetic part then presents his actual expression of those blessings:

> He shall bless Him [with the offering] of the lips at the times ordained by Him: at the beginning of the dominion of light, and at its end when it retires to its appointed place; at the beginning of the watches of darkness when He unlocks their storehouse and spreads them out, and also at their end when they retire before the light; when the heavenly lights shine out from the dwelling-place of Holiness, and also when they retire to the place of Glory; at the entry of the (monthly) seasons on the days of the new moon [i.e. the first of the month], and also at their end when they succeed to one another. Their renewal is a great day for the Holy of Holies, and a sign for the unlocking of everlasting mercies at the beginning of seasons in all times to come
>
> > At the beginning of the months of the (yearly) seasons
> > and on the holy days appointed for remembrance,
> > in their seasons I will bless Him
> > with the offering of the lips
> > according to the Precept engraved for ever:
> > at the beginning of the years

and at the end of their seasons

> when their appointed law is fulfilled,
> on the day decreed by Him
> that they should pass from one to the other—
> the season of early harvest to the summer time,
> the season of sowing to the season of grass,
> the seasons of years to their weeks (of years)—
> and at the beginning of their weeks
> for the season of Jubilee.

(9:26–10:8)[2]

The blessings here are termed "the offering of the lips", a phrase which signifies that while the group was separated from the temple and its sacrificial cult, it believed it could still offer acceptable worship to God through other means. The first time of the day for a blessing occurs at dawn and the last comes at night—a sequence that is consistent with the idea that for the Qumran group the day began in the morning. Josephus wrote that the Essenes' "piety towards the Deity takes a peculiar form. Before the sun is up they utter no word on mundane matters, but offer up to him certain prayers, which have been handed down from their forefathers, as though entreating him to rise" (War 2.8, 5 [129]).[3] Prayers or blessings are also attached to the first day of the month in a new season (these are the memorial days in Jubilees) and the last in each quarter (the four intercalary days). Festivals as well as the new year are included; the same is the case for the sabbatical and jubilee periods. At a later point in the same column the poet names events before which he will bless God (10:13–14); here again the sequence begins in the morning: "Before I move my hands and feet/I will bless His name. I will praise Him before I go out or enter, or sit or rise/and whilst I lie on the couch of my bed".

The Damascus Document

The Damascus Document is another work that belongs in the category of constitutional rules. It agrees with the Rule of the Community in many ways, but it legislates for communities that inhabit towns and villages, not for a group that was segregated geographically as the Qumran group was. One of the most interesting comments in the book comes in 16:2–4 where the author's indebtedness to Jubilees finds expression: "And the exact interpretation of their ages about the blindness of Israel in all these matters, behold, it is defined in the book 'of the divisions of the periods according to their jubilees and their weeks'". The words between quotation marks are the title that Jubilees gives to itself. Although it is not simple to align the contents of Jubilees with what is said here about it, the passage does serve to place the Damascus Document within the tradition of Jubilees and thus also of its calendar.

In CD 3:14–15 one reads that God had revealed to faithful people "hidden matters in which Israel had gone astray: his holy sabbaths and his glorious feasts, his just stipulations and his truthful path." We find here the same notion as in Jubilees where the sabbaths and festivals were named as areas in which Israel would err. In the present

passage, however, these are termed "hidden matters" *(nstrwt)* in which Israel had strayed. In the parlance of the group "hidden matters" refers to what they alone had divined from the scriptures, matters to which all others from Israel were blind. Something about sabbaths and festivals, perhaps celebrating them at the correct times, fell into that category. The sixth column of the Damascus Document contains another statement which points in the same direction. It specifies that the member of the group is "to keep the sabbath day according to the exact interpretation, and the festivals and the day of fasting, according to what they had discovered, those who entered the new covenant in the land of Damascus" (6:18–19). Apparently those who entered this covenant (the meaning of "land of Damascus" in this context is not known) came to exact conclusions on the basis of their discoveries through scriptural interpretation, and these discoveries involved the precise keeping of sabbaths, festivals, and the Day of Atonement ("the day of fasting").

How seriously correct observance of the sabbaths and festivals was taken emerges from the twelfth column of the work: "But every one who goes astray, defiling the sabbath and the festivals, shall not be executed, for guarding him belongs to men; and if he is cured of it, they shall guard him for seven years and afterwards he shall enter the assembly" (12:3–6).[4]

The War Scroll

The text that is devoted to a lengthy description of the final war between the sons of light and the sons of darkness has little to offer with regard to the calendar (cf. 10:15), but one passage in it has stirred up interest and perhaps some confusion in the field of Qumran studies. The passage in question names several leaders of the sons of light and reads:

> fathers of the congregation, fifty two. They shall arrange the chiefs of the priests behind the High Priest and of his second (in rank), twelve chiefs to serve in perpetuity before God. And the twenty six chiefs of the divisions *[wr'šy hmšmrwt]* shall serve in their divisions and after them the chiefs of the levites to serve always, twelve, one per tribe. And the chiefs of the divisions shall each serve in their place. The chiefs of the tribes, and after them the fathers of the congregation, shall have charge of the sanctuary gates in perpetuity. And the chiefs of the divisions *[wr'šy mšmrwtm]* with their enlisted shall have charge of their feasts, their new moons and their sabbaths and all the days of the year—those of fifty years and upwards. These shall have charge of the holocausts and the sacrifices, in order to prepare the pleasant incense for God's approval, to atone for all his congregation and in order to grow fat in perpetuity before him at the table of his glory. They shall arrange all /these/ during the appointed time of the year of release.
>
> (2:1–6)

Several words from this text have survived in some of the cave 4 copies of the scroll ($4QM^{d}$ 1 [see also $4QM^{f}$ ii 7]), although the number "twenty six" for the priestly divisions must have occurred in one of the missing sections of the fragment. The context shows that these leaders were connected with the temple service, and the number of

priestly divisions is given as twenty six, not the twenty four of 1 Chr. 24:7–18 (these divisions of priests who rotated periods of duty in the temple each week are discussed on pp. 72–4). This number led scholars to propose that the sect altered the number twenty four to one that would fit exactly with the fifty two weeks in their year (e.g. Liver 1968:36–7). It is debatable, however, whether they have correctly explained the number. The text does not in fact assert that there are twenty-six divisions, only that there are twenty six leaders of divisions. Furthermore, as study on the other calendrical/ liturgical texts from Qumran cave 4 (see below, pp. 77–87) has shown, all other cases in which the names of the priestly courses are employed in calendrical contexts presuppose that there were only the twenty four courses known from 1 Chr. 24:7–18. That is, in the texts that name the priestly courses, a group repeats its period of service twenty three, not twenty five, weeks after its earlier stint of duty. It may be that the reference to twenty six chiefs of divisions in the second column of the War Scroll is simply a way of indicating that there were in fact twenty six units of time in a year (two weeks each) in which the priestly courses would be on duty in the temple, not just twenty four.[5] If this is the correct explanation, the Qumran group shared the views of other Jews regarding the number of priestly courses and their periods of cultic service, although the number twenty six (which assumes the 364-day solar year) is larger than one would find in a normal year if it was reckoned according to the luni-solar calendar familiar from rabbinic and later texts.

The Hymn Scroll (Hodayot)

The Hymn Scroll which, like the Rule of the Community and the War Scroll, is represented in a large copy from cave 1 and fragmentary copies from cave 4, contains a passage that is reminiscent of the part of the poem from column 10 of the Rule of the Community that was cited above.

> [For the Instruc]tor,
> praises and prayers,
> to bow down and entreat always,
> from period to period:
> when the light comes from his residence;
> in the positions of the day, according to the regulation,
> in accordance with the laws of the great luminary;
> at the return of the evening, at the departure of light,
> when the realm of the shades begins;
> at the appointed moment of the night, in their stations;
> at the return of dawn,
> at the moment when it withdraws to its quarters before the light;
> at the departure of night when the day enters;
> continually,
> in all the births of its time
> in the foundation of the period,
> in the positions of the stations in the commands of their signs
> through the whole realm,
> in accordance with the decree established through God’s mouth,

and through the witness of what is.

(20 [12]:4–9)

The Instructor is urged to pray at many times, but, as in the Rule of the Community, the first period for prayer is in the morning ("when the light comes from his residence"). The text also alludes to various other times during the day and night, all of which have been established by divine decree.

Texts such as the five listed above were available to experts from the early years of Qumran studies, and they showed that, while the details of the group's way of reckoning time were not stated in so many words in the scrolls, the calendar was an important topic in the history and life of the community. As matters developed, the relatively sparse givens in the first texts available provided enough information for scholars to elaborate entire theories about calendars in the scrolls—theories that in some cases have been confirmed by the newer evidence from cave 4 texts.

5
A HISTORY OF SCHOLARSHIP ON THE QUMRAN CALENDARS

From the very beginning of Qumran studies, the calendar has played a significant role in scholarly research on the scrolls. As a way of introducing the subject, it is useful to follow the history of scholarly investigation into the topic; a study of the various kinds of calendrical texts will form the subject of the next chapter.

S.TALMON

In his 1951 article on Pesher Habakkuk, Talmon, besides clarifying the passage about the Day of Atonement quoted above, also draws attention to a number of the calendrically significant passages that were discussed in chapter 4. He devotes some space in his short study to other events in Jewish history in which calendrical differences were involved: King Jeroboam's new festival date of 8/15 rather than 7/15 for the autumnal holiday (1 Kgs. 12:32–4); and the separate Samaritan calendar and the Jewish charge that the Samaritans had interfered with the relay of fire signals from Jerusalem announcing the beginning of the month (Mishnah Rosh Ha-shanah 2). These, and a later episode pitting Rabban Gamaliel against Rabbi Joshua (Babylonian Talmud Rosh Ha-shanah 25ab), show the importance attached to calendar reckoning in Jewish history. The case of the Wicked Priest and the Teacher of Righteousness adds yet another instance. "Viewed in comparison with other separatist movements, in biblical as well as post-biblical times, deviation from the official calendar is found to constitute a standard feature in Jewish sectarianism, especially during the centuries immediately preceding the Christian era and during the early Christian period" (Talmon 1951:563). In his analysis of the matter, Talmon also highlights two other passages which were adduced in chapter 4: CD 6:17–19 which prescribes that the sabbaths and festivals are to be kept according to the distinctive views of the author; and 1QS 1:13–15 where moving the times of festivals forwards or backwards is prohibited. He also reminds the reader that the Damascus Document cited Jubilees as an authority (in CD 16:2–4) and that Jubilees staunchly defends a 364-day calendar which differs from any system which is supposed to have been put into practice in the temple.

D.BARTHÉLEMY

Barthélemy also made important contributions to clarifying the calendrical situation at Qumran.[1] We owe to him the observation that in the calendar of Jubilees the Festival of Weeks would fall on 3/15 and the omer-waving ceremony would thus occur on 1/26.

These data entail that the year would begin on a Wednesday, the fourth day of the week—a very logical inference since the sun, moon and stars were created on that day (Gen. 1:14–19). It is interesting that he refers to the Muslim writer Al-Biruni (973–1048) who had in his work *Vestiges of the Past* ascribed a similar calendar to people he called Magharya (cave people). He quotes this passage from Al-Biruni:

> Abu-Isa Alwarrak speaks in his *Kitab al-Makalat* of a Jewish sect known as the Maghariba, who claim that festivals are legal only when the moon appears full in Palestine *in the night of Wednesday which follows the day of Tuesday,* after sun-set. This is their New Year's Day. It is from this day that the days and months are reckoned and that the annual cycle of festivals begins. For God created the two great givers of light on a Wednesday. Likewise, they do not allow that the *Pasch* [= Passover] fall on any day other than *Wednesday*. However, they consider the obligations and rituals prescribed for the Pasch as necessary only for those who live in the land of Israel. All of this is opposed to the customs of the majority of the Jews and to the prescriptions of the Torah.
>
> (Sachau 1879:278)

Barthélemy was the scholar whose views laid the foundation for the controversial and highly suggestive theses presented a short time later by A.Jaubert.

A.JAUBERT

In a series of articles that were eventually brought together in her book *La date de la cène* (1957),[2] Jaubert sets forth a comprehensive theory about the solar calendar most clearly attested in 1 Enoch and the Book of Jubilees. It is extraordinary that she was able to do this at a time when no Qumran text that mentioned this calendar had yet been identified. It is evident from the title of her book that her concern was with the New Testament problem of dating the Last Supper and hence the death of Jesus. As she writes in her Foreword:

> The date of the Last Supper is linked with the problem of the day of Jesus' death, a question which has occupied exegetes since the end of the second century. In the present work a new solution is proposed, based on an ancient Jewish calendar, recently discovered, and on an Eastern patristic tradition which has all at once been illumined by the new calendar.
>
> (Jaubert 1965:9)

Her plan was to gather the evidence for the ancient Jewish calendar she had found, study its origins and history, and "trace its subsequent, important influence on the Christian liturgy. This is the essential basis for establishing the fact that it was in a liturgical context that there grew up a Christian tradition placing the Last Supper on Tuesday evening" (Jaubert 1965:10). After these investigations she was to turn her attention to the gospels themselves to check whether her hypothesis "respects the internal requirements

of the text, satisfies their demands and increases their intelligibility and coherence" (Jaubert 1965:10).

As she arranges the argument in her book, she first sets forth what she calls "an ancient Jewish calendar". This turns out to be the calendar of the Book of Jubilees in which the year consists of 364 days exactly and in which there is no evidence of intercalation. Jaubert insists that Jubilees' strict legislation about this calendar in all its datails (exactly fifty two weeks, four seasons of exactly thirteen weeks each, with the first day in each being a day of remembrance) "is intended to bring into prominence the days of the week. It means that the liturgical festivals will fall from year to year *on the same day of the week*. This is an essential characteristic of this calendar" (Jaubert 1965:21). She points out that the Book of Jubilees contains within it the data for solving an ancient problem of biblical and calendrical import—the date for the Festival of Weeks—but that scholars had brushed aside what it said because of their refusal to believe that in its system the year began on the fourth, rather than on the first, day of the week. Jubilees clearly implies that the festival occurred on 3/15 and that the omer-waving ceremony from which it was dated must have occurred on 1/26. Jaubert expresses the details of the calendar in a simple table for a quarter of the year (it would repeat itself exactly for the other three quarters) (Jaubert 1965:27).

	months 1, 4, 7, 10					*months 2, 5, 8, 11*					*months 3, 6, 9, 12*				
Wednesday	1	8	15	22	29	6	13	20	27		4	11	18	25	
Thursday	2	9	16	23	30	7	14	21	28		5	12	19	26	
Friday	3	10	17	24		1	8	15	22	29	6	13	20	27	
Saturday	4	11	18	25		2	9	16	23	30	7	14	21	28	
Sunday	5	12	19	26		3	10	17	24		1	8	15	22	29
Monday	6	13	20	27		4	11	18	25		2	9	16	23	30
Tuesday	7	14	21	28		5	12	19	26		3	10	17	24	31

Jaubert also establishes by another approach that the year began on a Wednesday in Jubilees. She starts with the assumption that the author would never allow the patriarchs to travel on a sabbath, since in his estimation they were models of piety, and a law forbidding such journeys is explicit in the book (50:12). Hence, she assembles the dates in the book on which the patriarchs are said to have traveled, an exercise that can be easily carried out because Jubilees dates a large number of events to the very day on which they occurred. In a chart she assigns a letter for each day of the week and finds that "the only day of the week on which no journey takes place is day D, the day on which also occurs the halt in the pursuit of Jacob by Laban. This is, consequently, the *sabbath*. Day A, which is the first day of each trimester and of the year falls on a *Wednesday*" (Jaubert 1965:27). If we check the days of the week on which the religious holidays fall, they take place on Wednesday, Friday or Sunday, with Wednesday receiving greatest emphasis. Jaubert finds that the same week days are highlighted in the stories about the patriarchs. For example, Abraham died on the Festival of Weeks, Levi was born on the first day of the year, and Judah entered this world on the Festival of Weeks: "These examples suffice to demonstrate that the principal events of the history of Israel are associated with the liturgy. In the mentality which presides over the drawing up of these

accounts the history of the holy people is rendered sacred throughout. It is adapted to *the rhythm of a liturgical cycle*" (Jaubert 1965:30).

From Jubilees Jaubert turns her gaze backwards to discover the origin of what she understands to be a liturgical system. On her reading of the text, Jubilees more faithfully followed the meaning of Lev. 23:6 in dating the Festival of Weeks than did the Pharisaic reading, and Jubilees' practice of referring to the months by ordinals only harmonizes with the priestly practice in the Hebrew Bible. As a result, she applies to the books of the Hexateuch the same test she applied to Jubilees: translating the dates expressed in these books from numerals for days and months into the days of the week as they would be in the Jubilees calendar. Some fifteen biblical dates fall into this category and all would be a Sunday, Wednesday, or Friday if one assumes the Jubilees system. She also works with the flood story where there is such a heavy concentration of dates in the priestly system, with the dates in the Books of Chronicles (where 2 Chr. 3:2 is a problematic passage in that it has Solomon beginning temple construction on the sabbath), Ezra and Nehemiah (all fall on Wednesday, Friday, or Sunday), and Ezekiel (only 30:20; cf. 8:1) falls outside the pattern by dating an event to a Tuesday). From the repetitive pattern in these priestly books with which the Qumran writings and Jubilees share many affinities she concludes that there was a continuity of calendars and that the Jubilees-Qumran calendar thus has biblical roots in the priestly school. Later she shows that traces of this calendar survive in other second-temple literature. The evidence (e.g. in Ben Sira) suggests to her, however, that a modification in the priestly system toward a lunar calendar took place, especially under Hellenistic influence in the third century BCE, but that the festivals continued to be observed on the same days of the week. She also hypothesizes that the "liturgical" days—Sunday, Wednesday, Friday—were selected for highlighting because of the place they occupy in the week, that is, at the beginning, middle, and just before the sabbath. She points to sources from other Jewish traditions that attest to the existence of a 28-year solar cycle which starts on the night between Tuesday and Wednesday at the spring equinox. She surveys a number of obscure references to the 364-day calendar and a calendar beginning on a Wednesday (e.g. in 2 Enoch, among the Qaraites). Her conclusion is worth quoting:

> it is certain that, at the beginning of the first century, A.D., there existed *two liturgical calendars*. In one of these the feasts were assigned to days of the lunar month; this was the official calendar, about which we can find information in later rabbinical Judaism. In the second, the feasts always fell on fixed days of the week. The character of this calendar may now be discovered in contemporary Jewish sources. It is witnessed only in its Jubilees-Qumran type; but it is probable that it also existed in modified forms which could have either preserved an intermediary stage of the calendar's development or attempted a certain compromise with the official reckoning.
>
> (Jaubert 1965:52)

The final chapter of her first section deals with Christian liturgy. She uncovers, usually in little known works, that the same liturgical days continued to be observed by at least some Christians and that elements of the old priestly calendar survived into parts of

Christianity, particularly the attachment of festivals to fixed days of the week rather than to dates in the lunar months. Moreover, "if the Jewish circles which gave birth to Christianity celebrated the festivals on fixed days, it must have celebrated the Pasch [= Passover] on Wednesday and the paschal meal on Tuesday evening" (Jaubert 1965:65).

The second part of her argument is of less interest in the present context because it focuses on the patristic tradition that the Lord's Supper was celebrated on Tuesday evening, not Thursday. The primary source is the Didascalia but Epiphanius and other sources are also adduced for what she considers to be a second-century Judeo—Christian tradition.

In the third part of the book she takes up the evidence from the gospels and the celebrated conflict between the synoptic gospels (Matthew, Mark, and Luke) and John over the day of Jesus' death. That is, in the synoptics the Last Supper is a passover meal (hence held on the evening of 1/14; Matt. 26:17–19; Mark 14:12–16; and Luke 22:7–15), while the crucifixion occurs on 1/15. But in John Jesus dies on 1/14 before his Jewish captors had celebrated the Passover, and his death coincides with the time when the passover lambs were being slaughtered (see John 18:28; 19:14, 36). Jaubert's solution is to propose that different calendars underlie the synoptic and Johannine accounts:

> If, however, one applies to the Gospel narratives the tradition preserved in the first account of the *Didascalia,* the contrast between John and the Synoptics disappears of itself. The chronology is then the following:
>
> Jesus celebrates the Pasch *on Tuesday evening, the eve of the Pasch,* according to the *old* priestly calendar.
>
> He is arrested in the night between Tuesday and Wednesday.
>
> He dies on *Friday,* 14 *Nisan,* the *eve of the Pasch,* according to the *official* calendar.
>
> The old Pasch and the official Pasch would accordingly, have been celebrated that year at a distance of three days from one another.
>
> (Jaubert 1965:97)

In other words, the synoptic gospels are the ones that preserve a primitive tradition. Jaubert devotes a fair amount of space to attempting solutions of other chronological difficulties in the passion narratives. She opts for a two-and-a-half day period, rather than the very brief night-early morning span suggested by Mark. So, Jesus was arrested on a Wednesday but died on Friday, several days after the paschal meal held on Tuesday evening.

The positions set forth by Jaubert are varied, and they have called forth diverse responses. New Testament scholars appear not to have been convinced by her explanation of the discrepancy between the synoptics and John on the passion chronology, in part because there is no other evidence that the Qumran-style calendar of a 364-day year was adopted by any of the evangelists. Her suggestion that the same calendar underlies parts of the Hebrew Bible has also not won general acceptance, although it remains an appealing possibility (VanderKam 1979:390–411).

J.T.MILIK

While Jaubert's intriguing suggestions were attracting a large amount of attention, new evidence came to light that, in part, supported her views. J.T.Milik reported several details about Qumran calendrical texts—including the one that would later be called 4QMMT (the so-called Halakhic Letter) and the mishmarot texts[3]—in 1956.[4] At that time he was able to confirm that the calendar which underlay the mishmarot documents was indeed the one contained in Jubilees, as shown by a text that listed and dated festivals, and that, as Jaubert had demonstrated, the omer-waving did take place on 1/26 and hence the Festival of Weeks on 3/15. He also adds the perhaps somewhat unexpected detail that some Qumran calendrical works correlated three entities: the 364-day system, the twenty four priestly mishmarot, *and a lunar calendar*. Milik supplied more information in his introductory book published first in French under the title *Dix ans de Découvertes dans le Désert de Juda* (1957) and later in English as *Ten Years of Discovery in the Wilderness of Judaea* (1959).[5] In his view the people he calls the monks of Qumran, "although they had broken off relations with the Jerusalem priesthood, did not cease to ascribe an eternal value to the divine service of the priests and were convinced that it would be restored in the fullness of the Last Days" (Milik 1959:41). In a section of the book devoted to the calendar he gives a comprehensive description of what the texts from cave 4 contributed to knowledge of calendrical calculations and procedures at Qumran. He begins with the mishmarot texts:

> The pattern of the work is simple; a typical sentence is as follows: 'The 16th of the same (month, i.e. the second month of the first year) is the Sabbath of Melakiah.' This means that Melakiah would have begun his week of duty in the Temple on the Sabbath, the 16th of the second month. The priestly roster is spread over six years, and this sexennial cycle reflects a desire to synchronize the sect's religious calendar (of twelve months with thirty days each and four intercalated days, i.e. a solar reckoning) with the luni-solar calendar (of twelve months with alternatively twenty-nine and thirty days and a month intercalated every three years). According to the calculations of the Qumran scribes, the two calendars synchronize every three years (364×3=354×3+30). Six years are needed for a priestly family's turn to come round again in the same week of the year, since there were twenty four families (cf. I Chron. 24.7–18) serving thirteen times in such a period (24×13=52×6). A work from Qumrân, preserved in three copies, gives this triple synchronism of the religious calendar, the luni-solar calendar and the weekly roster of the priests. For example, 'Friday in Yehezq'el, the 29th (day)—the 22nd of the eleventh month', is to be understood as follows: 'The 22nd day of the eleventh month (of the first year in the religious calendar) falling on the Friday in the week when Yehezq'el is on duty, corresponds to the 29th (and last) day of the eleventh month (ˇeb) in the luni-solar calendar.
>
> (Milik 1959:108)

He goes on to note the existence of texts that mention on which day in the week of a priestly course each of the festivals fell.

Milik makes a few proposals about a method by which the two calendars of Qumran—the schematic solar and lunar systems—could be synchronized. He envisages a twenty four-year cycle (four of the sexennial cycles that he had mentioned) after which a month of twenty nine days would have to be intercalated. "But such an additional month would have required an additional turn of duty from four priestly families every twenty four years. To make each of the twenty four families take part in this duty, a cycle of 144 years (24×6) would be necessary" (Milik 1959:110). As for the origins of the 364-day calendar, he affirms Jaubert's views: it had biblical roots and may have come from the Egyptian calendar of twelve thirty-day months with five intercalated days; after the exile Judeans would have modified this system and adapted it to their cultic needs. In civic life the luni-solar calendar of Babylonian origin was used. Tucked away in an "additional note" at the end of the book Milik furnishes more intriguing information about the unpublished calendar texts from cave 4:

> Further study of the *Mišmarôt* from Cave IV, not yet finished, seems to favour the assumption that the Essenes computed the beginning of *their* lunar month from the full moon, not the new moon. Nevertheless, in one of their synchronistic tables, in addition to the correspondence between the day of their solar calendar and the first day of their lunar month they also note the day of the solar month on which the *new* moon falls; this correspondence is called *dauqah* or *duqyah*, which in Rabbinic literature means 'precision (obtained by an observation)' the root *dwq* meaning 'to examine, observe'. There also seems to be no doubt that they reckoned the day as starting with sunrise and not sunset.
>
> (Milik 1959:152, n. 5)

All these statements are extremely suggestive, but Milik supplies no textual evidence for them—either by referring to their official names or numbers or by quoting fully from them. Yet, despite the inadequate presentation of data, researchers had before them at this early date a goodly sampling of the unpublished information.

S.TALMON

On the basis of the information that Milik supplied, Talmon returned to the topic and wrote one of the most comprehensive studies of the Qumran calendar. In his article he highlights the central place that what was perceived to be the revealed reckoning of times must have held in the rupture that developed between the scrolls community and the priestly authorities in Jerusalem (Talmon 1958:162–99).[6] He articulates in forceful terms how important a practical deviation such as the calendar would have been in Judean society:

> No barrier appears to be more substantial and fraught with heavier consequences than differences in calendar calculation. An alteration of

> any one of the dates that regulate the course of the year inevitably produces a break-up of communal life, impairing the coordination between the behaviour of man and his fellow, and abolishes that synchronization of habits and activities which is the foundation of a properly functioning social order. Whosoever celebrates his own Sabbath, and does not observe the festivals of the year at the same time as the community in which he lives, removes himself from his fellows and ceases to be a member of the social body to which he hitherto belonged.
>
> (Talmon 1958:163–64)

He argues that the sect not only celebrated festivals on different days than their Jewish contemporaries but, since it placed the beginning of the day in the morning, it observed the sabbath at a time that did not entirely correspond with the specific hours for the day of rest observed by other Jews. To show the importance of the issue, he adduces a number of passages from texts known at the time (1QS, CD). He studies a text from cave 4 (the information was from Milik's article mentioned above) that listed holidays and specified the day in the weekly service of the priestly courses then on duty. He perceptively observes that although the War Scroll said that there were twenty six courses, the text he was studying presumed only twenty four, as in 1 Chronicles. The fragmentary text gave enough information for him to be able to reconstruct the entire periods of service for all of the mishmarot in a year. The text also gave sufficient information to date the waving of the omer to 1/26, a Sunday. That is, the group read Lev. 23:15–16 with its reference to the day after the sabbath as intending the first day of the week; they disagreed with what became the common view, namely that "sabbath" here meant "feast day". Talmon makes the point that while in rabbinic sources the priestly courses are said to have changed on the sabbath, in the Qumran mishmarot texts they change on Sunday (Talmon 1958:186–7).

Talmon explains how in the two calendars a holiday such as the Day of Atonement could have been observed at very different times—a discrepancy that clarifies the dispute (see pp. 44–5) between the Wicked Priest and the Teacher of Righteousness that is mentioned in the Habakkuk Pesher. He also finds some passages in rabbinic literature in which a conflict with advocates of a calendar like that of the Qumran texts is reflected (e.g. the interpretation of Isa. 30:26 in rabbinic texts and in 1 Enoch 72–3; Talmon 1958:183–4). He adds a section that deals with the problem of why, in sectarian complaints about violating sacred times, the sabbath is associated with the festivals. That is, why do the Qumran writers claim that their opponents violate the sabbath as they do the festivals which they celebrate at the wrong times? How could their opponents celebrate the sabbath at the wrong time? Talmon thinks the sectarians could make such charges because they observed the sabbath rest beginning at sunrise, while other Jews started their sabbath at the previous sunset. This would mean that in sectarian eyes other Jews treated the time between Friday at sunset and Saturday at sunrise as sacred whereas it was a secular time, and vice versa for the period from sunset on Saturday to sunrise on Sunday. Whereas the rabbinic sequence of prayers begins in the evening (using Deut. 6:7 as the basis: "Recite them to your children and talk about them when you are at home and when you are away, when you lie down [this comes first] and when you rise [this comes

second]"), the sectarian order of prayer begins in the morning. He cites the paraphrase of Deut. 6:7 in 1QS 10:13–14 and considers the changed order of items to be no accident:

Deut. 6:7	at home, away, lie down, rise.
1QS 10:13–14	stretch out hands and feet, go out, come in, sit, stand, lie in bed.

He also thinks that in the Qumran texts the Hebrew words for the setting *(y ')* and rising *(bw')* of the sun are reversed from their meaning in the Bible (Talmon 1958:190; cf. 198–9). He acknowledges that CD 10:14–15 contradicts his view because it begins the sabbath on Friday evening; however, he considers the sentence to be a later addition to the text that originally agreed with the position in the Book of Jubilees (Talmon 1958:192–3). After his lengthy review of the evidence, he concludes:

> The linking of the Sabbath with the festivals in the 'Calendar dispute,' both in the writings of the sect and in the polemics of the Rabbis, furnished us with evidence for the contention that the sectarians differed from normative Judaism in two main principles: a) in the calculation of the year (employing respectively the solar period and the course of the moon as basis of their computations) and b) in the method of reckoning the day (from sunrise or from sunset).
>
> (Talmon 1958:194)

Talmon next turns to an interesting problem: if the sectarians were Essenes (the Jewish group which they most nearly resemble), why is there no evidence in the sources that the Essenes had a different calendar than other groups did? Here he alludes to Y, Grintz's suggestion that the Essenes were the Boethusians of rabbinic literature. If this is the case, then the sources do report that the Essenes = Boethusians differed from other Jews regarding the calendar (Talmon 1958:196–7).

J.SANDERS

While there was no doubt that the 364-day calendar was presupposed by works such as the mishmarot texts, at this point no explicit statement in a Qumran text had surfaced to the effect that the group believed the year had precisely 364 days. Such evidence was not available until 1965 when J.Sanders published the cave 11 Psalms scroll (Sanders 1965). In a paragraph from the scroll that Sanders labeled "David's Compositions" (27:2–11) we read:

> And David, son of Jesse, was wise, a luminary like the light of the sun, learned knowledgeable, and perfect in all his paths before God and men. And to him YHWH gave a wise and enlightened spirit. And he wrote psalms: three thousand six hundred; and songs to be sung before the altar over the perpetual offering everyday, for all the days of the year: three hundred sixty four; and for the sabbath offerings: fifty two songs; and for

> the offering of the beginning of the month, and for all the days of the festivals, and for the day of atonement: thirty songs. And all the songs which he composed were four hundred and forty-six. And songs to be sung over the possessed: four. The total was four thousand and fifty. He composed them all through the spirit of prophecy which had been given to him from before the Most High.

This short paragraph is intriguing for several reasons: not only does it say in words that could not have been plainer and clearer that the year has 364 days in it ("songs to be sung before the altar over the perpetual offering[7] everyday, for all the days of the year: three hundred sixty four"); it also contains an entire series of numbers that have significance within the framework of the 364-day calendar.

1 3,600: David's immense number of psalms is a multiple of 360, the number of days in the calendar that underlies the system in the Astronomical Book. The reason why that number is multiplied by ten is, it seems, so that the sum total of David's compositions (4,050) can be a larger number than that of Solomon who wrote only 4,005 according to 1 Kgs. 4:32.
2 52: The figure for the sabbath songs is the number of weeks in the solar year of 364 days (see Jub. 6:30).
3 30: The number includes the songs for the offerings on the firsts of the months, the festivals, and the Day of Atonement. It seems most natural to assume that there are twelve of these for the firsts of the months; besides the one for the Day of Atonement the reader is left to guess what the remaining seventeen festival days might be. Brownlee has noted that the holidays mentioned in a biblical list such as Leviticus 23 do, in fact, total seventeen (Passover 1, Unleavened Bread 7, Weeks 1, and Booths 8) but one wonders whether some of the special Qumran holidays would not also have been incorporated. So, the exact components that go into making up the number thirty in this context are not certain, yet the connection of the figure with the sacred calendar is.
4 4: The four songs to be sung over the possessed probably correspond to the four days that had to be added to the base calendar of 360 days to produce 364, as is the case in the Astronomical Book of Enoch.

It should also be said that David's wisdom is stressed at the beginning of the paragraph. Perhaps the point was that Solomon was not the only wise king in the Bible. That the poems for the calendrical units came by inspiration (through prophecy) shows that David was accomplished in this field as well.

In this context it is convenient to mention the other evidence from Qumran for the number of 364 days in a solar year. Since 1965 at least one more explicit reference has been published. In 4Q252 (Commentary on Genesis A), the first part of which recounts the flood and highlights the dates at which various events occurred, the author says: "On that day, Noah went out of the ark, at the end of a complete year of three hundred and sixty four days, on the first (day) of the week" (4Q252 2:2–3). This text confirms what might be expected on the basis of the Book of Jubilees: the calendar was tied to the many specific dates that are expressed in the flood story. Another Qumran work comes extremely close to specifying the number 364 but breaks off just before stating it fully.

4QMMT (the so-called Halakhic Letter), lines 20–21 read: "And the year is complete—three hundred and si[xty-four] days".[8] The 364-day calendar also seems to underlie the text which is called the Songs of the Sabbath Sacrifice, a work that provides such songs for the first thirteen sabbaths in a year, that is, the sabbaths in one-quarter of the year (Newsom 1985:1, 5, 18–19). The opening line of the first copy reads: "[Of the Instructor. Song for the holocaust] of the first [sabbath,] the fourth of the first month" (4Q400 1 i 1). In the 364-day system according to which the year always begins on a Wednesday, the first sabbath is the fourth of the first month.

Other publications made available some additional texts that, while not stating the matter in so many words, presuppose the 364-day solar calendar. In 1976 Milik published in *The Books of Enoch* many of the fragments from the Aramaic manuscripts of 1 Enoch together with an extensive introduction to, and discussion of, the texts and the issues they raised. In the part of the book devoted to the astronomical teachings of 1 Enoch, he adduces new information from a number of the Qumran calendrical texts.

Y.YADIN

The next year Y.Yadin published the eagerly awaited Temple Scroll, which is the longest of all the scrolls from the Qumran caves—some twenty eight feet. He dated the work to the time of the Hasmonean ruler John Hyrcanus (135–104 BCE) or a little earlier (others have defended a more ancient date). The lengthy text, which presents itself as the direct revelation of God to Moses, recapitulates the latter part of Exodus and continues working with sections from the remainder of the Pentateuch. In this respect it is almost like a continuation of the Book of Jubilees which treats Genesis and the first part of Exodus (the two agree on many points). Much of the Temple Scroll is dedicated, as one might expect from the name assigned to it, to a minute description of a vast temple complex that was to be built at some point in the future, presumably when the group behind it gained control over Jerusalem and its cult. The most important section for the present purposes is columns 13–29 which provide the fullest available Qumran list of cultic festivals and the laws that pertain to them, especially about sacrifices.[9] The descriptions of the individual holidays are often fragmentary, yet enough remains to see that the proper dating of the holidays and specification of the sacrifices to be offered on them were of paramount importance in the legal tradition represented in the Temple Scroll. The work is organized in such a way that it begins at the central point of sacredness, with the holy of holies, and works away from it. The festival list occurs at the point where the author is dealing with the altar and the surrounding area. The emphasis on sacrifices, as in Numbers 28–9, is easily understandable in this context.

Before the festival list commences there are a few hints that religious holidays were already under discussion in at least one other context. In the badly broken eleventh column there are references to "the sabbaths and at the beginnings of" (presumably the beginnings of the months; line 9), the Festival of Unleavened Bread and the day of offering the barley sheaf (line 10), the wheat offering (line 11; it was made at the Festival of Weeks), the Feast of New Oil (line 12), the six days (of the wood offering, line 12), the Festival of Booths, and an assembly (line 13). These are many of the holidays described

in more detail in columns 13–29, but there is no useful context in column 11 that would allow one to interpret the allusions.

The list itself includes these holidays:

1 The *tamid* or daily offerings (13:10–17): That the daily sacrifices are under discussion is shown by the phrase "like the morning offering" (line 15). The *tamid* offering was twofold, with one sacrifice made in the morning and one in the evening (see Num. 28:3–8; the phrase "like the one in the morning" figures in v. 8). This is the first of many hints that Numbers 28–9 is the base text with which the author is working.

2 The sabbath offering (13:17–14:7; the first part of the word "sabbath" is preserved in 13:17): As in Numbers 28 the paragraph about the sabbath sacrifice (28:9–10) follows the one about the daily offering.

3 Beginnings of the months (14:7–17:4): The fragmentary remains prevent one from learning anything about these occasions apart from a few sacrificial details. It may be that the first of the first month receives special mention in 14:9.

4 The days of consecration (15:3–17:4): After dealing with the regularly recurring occasions (each day, each sabbath, the first day of each month), the writer turns to the holidays that take place once each year. Column 15:4, 14 reports that there were seven days of consecration. These days were set aside for the ordination of priests, and a large portion of the paragraph sets forth what is to be done if a high priest is to be newly consecrated in his position (15:15–17). Yadin thought that the seven days were the first seven of the year. No dates are specified but, in view of the chronological order of the list from this point on, the days of consecration would have to fall between 1/1 and 1/14 (Passover). There is no similar biblical holiday, although the ordination of Aaron and the priests is the subject of Exodus 29 and Leviticus 8, passages on which the author has drawn for material in this section.

5 Passover (17:6–9): The exceptionally short paragraph on Passover dates it, as in the Bible, to 1/14 (the date is partially preserved in 17:6).

6 Festival of Unleavened Bread (17:10–16): Another brief section treats the seven-day Feast of Unleavened Bread. The biblical date for the beginning of the festival is preserved (1/15 in 17:10); that there are seven days involved is stated in 17:12. As in the Bible, there are special assemblies on the first and last days.

7 Waving of the barley omer (18:2–10): The Bible does mention the ceremonial presentation of the barley sheaf, dating it to "the day after the sabbath" (see pp. 30–1). Line 10 refers to the holiday as "the day of the sheaf-waving". The surviving words and letters do not contain a date, but other information in the Temple Scroll allows us to conclude that it fell on 1/26, as it would in the calendar of Jubilees. The occasion may have been regarded as a first-fruits festival.

8 Festival of weeks/first-fruits (of wheat; 18:10–19:9): The section spells out the method to be employed in determining the correct date for the holiday: "You shall count off seven complete sabbaths [= weeks] from the day on which you fetch the sheaf [from the wave-offering,] you shall count off until the day following the seventh sabbath, you shall count off [fifty] days, and you shall fetch a new offering to YHWH from your villages…" (18:10–13). If the waving of the barley omer occurred on 1/26, the feast of weeks would be celebrated on 3/15. Column 19:9 identifies the

festival, as Jubilees does, as "[the feast] of weeks and the feast of the first-fruits for eternal memorial."

9 Festival of the first-fruits of wine (19:11–21:10): The scroll includes a relatively long section on a new wine festival, a festal occasion that lacks a biblical model. The dating of the holiday is interesting because the same procedure as the one followed for the Festival of Weeks is mandated for this celebration: one is to count to the fiftieth day, starting with the Festival of Weeks (19:11–14). In other words, this was another first-fruits holiday that could also be termed a second Festival of Weeks. The date for the Festival of New Wine in the 364-day calendar would be 5/3.

10 Festival of the first-fruits of new oil (21:12–23:02): Like the new wine celebration, the new oil festival is not found in the Bible. According to the rules in this section, it too was to be dated by counting to the fiftieth day from the previous first-fruits festival, in this case, from the wine festival. It is a fourth first-fruits holiday and the third Festival of Weeks. It would take place on 6/22, a date confirmed by 4Q327 5:2–5 (on which see below).

11 Festival of the wood offering (23:03–25:01): The Bible alludes to the practice of bringing wood to fuel the fire on the temple altar, but it does not stipulate a date or dates when this was to be done (Neh. 10:34 says wood was to be brought "at appointed times"). The Temple Scroll mandates a six day holiday, with two of the twelve tribes bringing wood on each day. Yadin thought the six days in question were from 6/23–6/29.

12 Day of Remembrance (25:3–10): In the Bible trumpets were to be blown on 7/1; in this way it was marked as a unique first day of a month (see Num. 29:1). Column 25:3 calls the first of the seventh month "a great sabbath, a memorial of the blast of trumpets". The particular sacrifice for the memorial day was to be offered in addition to the ones normally sacrificed every day and on the first of a month (25:7). The first of the seventh month was to become the Rosh Ha-Shanah or New Year's Day of rabbinic times.

13 The Day of Atonement (25:10–27:10): The date of 7/10 is the biblical one.

14 The Festival of Booths (27:10–29:1): With the biblical calendars, the Temple Scroll legislates that the eight day celebration begin on 7/15 (27:10). The surviving portion of the text proceeds, however, only through its treatment of the fourth day.

What is novel in this section is the series of pentacontad holidays, that is, festivals separated from one another by a forty nine-day span and, in each case, therefore falling on the fiftieth day after the preceding one. Each of these pentacontad holidays can be called a Festival of First-Fruits. It may be that they were developed because of biblical references to grain, wine, and oil, three staple products of the Israelite economy.

1/26 Waving of the omer—first fruits of barley.
3/15 Festival of Weeks—first fruits of wheat.
5/3 Festival of Wine—first fruits of the vine.
6/22 Festival of Oil—first fruits of oil.

The last two are innovations in this calendar; also, the Bible does not speak of the omer-waving as a first-fruits offering. The information provided for dating these festivals, aided by the notice in 4Q327, another calendrical text, that the oil festival falls on 6/22, shows that the 364-day solar calendar underlies the system. If the oil festival was

on 6/22, all of the dates given above according to the Enoch/Jubilees 364-day calendar are confirmed.

Before leaving the Temple Scroll some laws in column 43 should be mentioned. There we learn that the first-fruits festivals were not only times for offering the initial harvest of the crop in question but also the time from which nothing of the old crop could be consumed.

> It will be eaten on these days and will not remain [from one year] for the next. They shall eat it in this way: the grain they shall eat from the feast of the first-fruits of the grain of wheat up to the following year, up to the day of the festival of first-fruits; the wine, from the day of the feast of new wine up to the day of the feast of new wine of the following year; and the oil, from the day of its feast up to the following year, up to the feast of the day of the offering of new oil on the altar.
>
> (43:4–9)

Similar legislation is found in Jub. 32:10–14.

The first hint that the calendrical situation at Qumran might be more complicated than had been thought occurred with Milik's announcement in 1956 that some Qumran lists correlated solar and lunar calendars. 4QDaily Prayers (4Q503), which appeared in 1982, contains indications that led its editor, M.Baillet, to see evidence of lunar influence in its calendar.[10] He argues that its occasional references to parts of light and dark could be explained as referring to the amounts of the moon's surface that were light or dark on particular dates, as in 1 Enoch 73, 78–9. From this he concludes that a lunar system seems to be involved. He also believes that the text's reference to a holiday in the middle of what he took to be the first month favored a time when the solar and lunar calendars would coincide, that is, in the first month of a three-year cycle. When all the cave 4 calendar texts became available in the early 1990s, the exact nature of the calendars became evident for the first time.

6
THE CALENDRICAL TEXTS

INTRODUCTION

The published Qumran texts that make explicit reference to the 364-day solar year and those that, by presupposing or pointing to it, occupied an important place in the history of scholarship on the Qumran calendars, have now been examined. In the section following our attention turns to those texts that are calendrical in nature in the sense that they are based on, and deal with, the sequence of days, weeks, and months, whether for a year or a longer cycle. These texts, which have become fully accessible only in the 1990s, offer a more comprehensive and detailed insight into the calendrical situation at Qumran and allow us to see it in a broader, clearer perspective. However much clearer that perspective may be, it should be remembered that every one of the calendars has survived in only a very fragmentary form—a fact that makes conclusions tentative or even speculative.

It should be said at the outset that the texts which go under the name calendars are not really calendars in the modern sense of the term—that is, they are not a listing and arrangement of all the days in a year. The Qumran calendrical documents never take such a form, and only in rare instances do they consist of simple listings of certain recurring phenomena in a year (e.g. sabbaths, festivals). More often they attempt to coordinate two or more entities with the sequence of days and months and even of years. One indicator of the religious nature of these documents is the fact that they frequently report when sacred festivals observed by the community occurred. As we have seen, the list of festivals attested at Qumran builds upon the one in the Hebrew Bible but, in the Temple Scroll in particular, it is longer than any list found in the Scriptures or in later Jewish literature. In addition to the scriptural holidays of Passover, Unleavened Bread, Weeks (calculated from the date when the omer was waved in the sanctuary), Day of Atonement, and Booths, the covenanters of Qumran also celebrated a sequence of first-fruits festivals that began with the waving of the barley omer on 1/26: the Festival of Weeks on 3/15; the Festival of Wine on 5/3; and the Festival of Oil on 6/22. The Temple Scroll also mentions the Wood Festival that may have taken place from 6/23–29 (see also Neh. 10:34). No Qumran text, whether those that have long been available or the ones that were published later, ever makes mention of the Festivals of Purim and Hanukkah. That Purim fails to appear is no surprise, since no copies of the book of Esther have surfaced in the caves; Hanukkah's absence can probably be explained by its late origin and its connection with the Maccabees who seem to have been enemies of the Qumran group at various times in its history.

Besides festivals, a second item that the covenanters correlated with their basic calendars was the system of twenty four priestly courses or watches. Understanding this fairly simple institution is crucial to grasping what is said in the Qumran calendars. The scriptural basis for the priestly courses or watches is 1 Chr. 24:7–18. The pericope is part of a longer section in which David is giving instructions to Solomon regarding the temple

that he was to build and the service that was to be conducted in it. Chapter 24 is devoted to the descendants of Aaron, that is, to the priests. Aaron's two sons, Eleazar and Ithamar, are pictured as the ancestors of two groups of priests. More of Eleazar's descendants were found (more "fathers' houses") than of Ithamar's, so Eleazar's group was organized under sixteen heads of ancestral houses and that of Ithamar into eight. They were arranged by casting lots and the results were officially recorded by a scribe in the presence of the king and high officials (24:1–6). While the list of the twenty four names is not very interesting in itself, it is useful to reproduce it and to have it available for reference.

1 Jehoiarib
2 Jedaiah
3 Harim
4 Seorim
5 Malchijah
6 Mijamin
7 Hakkoz
8 Abijah
9 Jeshua
10 Shecaniah
11 Eliashib
12 Jakim
13 Huppah
14 Jeshebeab
15 Bilgah
16 Immer
17 Hezir
18 Happizzez
19 Pethahiah
20 Jehezkel
21 Jachin
22 Gamul
23 Delaiah
24 Maaziah

In the list itself the two branches of Eleazar and Ithamar are not distinguished, although from the evidence found in the roster of singers in chapter 25 it can be argued that the "divisions are ordered according to a principle of alternation: one father's house from Eleazar and one from Ithamar, and so on up to the sixteenth division. The last eight are all sons of Eleazar…" (Japhet 1993:428). At the end of the list the Chronicler writes: "These had as their appointed duty in their service to enter the house of the Lord according to the procedure established for them by their ancestor Aaron, as the Lord God of Israel had commanded him" (24:19). The Bible says very little about these priestly divisions, but later sources indicate that priests from the groups served in a rotation at the temple, with one course officiating for a

week, after which the next one in the list replaced it. Division into twenty four groups was necessitated, it seems, by the large number of priests—too many to allow all of them the right to serve at the one temple at the same time. The historian Josephus mentions the twenty four priestly divisions or courses and adds: "he [=David] further arranged that one family should minister to God each week from Sabbath to Sabbath" (Ant. 7:365=7:14:7). Josephus, who was himself a priest, was presumably reflecting, in this addition to the biblical givens, the practice in his own time. Other sources verify that the change from one priestly group to the next took place on the sabbath, and the twenty four priestly courses are listed in several inscriptions that have turned up from time to time.

The fact that each course served one week at a time and did so in a defined order (that of 1 Chr. 24:7–18) meant that the name of a priestly watch could be used as a way of designating a particular week. The traditional system also allowed one to refer to days within that seven-day span as day one, day two, etc. of priestly course X. As highlighted below, several of the Qumran calendrical documents incorporate the names of the priestly courses into their presentation. Their presence in these lists raises intriguing questions about why a group that was physically and ideologically separated from the current temple cult took the trouble to align the periods when the priestly courses would be on duty with other entities in their calendars.

It appears clear enough that the act of coordinating the periods of service for the priestly divisions with the movements of the heavenly luminaries has a deep theological meaning. As M.Albani has phrased the point:

> The basic idea of the calendrical arrangement represented in the 4QMishmarot texts is the concept of a correspondence between heaven and earth, according to which the circuits of the stars and the cycles of the priestly courses have a common origin. This universalizing of the temple cult to the farthest horizon of the creation naturally could have sprung only from the theological interests of priestly circles.[1]

With heaven and earth moving in a harmonious rhythm, the order and design of God's creation became manifest to all.

It was seen earlier that 1QM 2:2, with its reference to twenty six chiefs of the divisions or watches led scholars to assume that the Qumran sectaries had added two priestly courses to the biblical list to make the number fit exactly with their schematic calendar of 364 days and fifty two weeks. The evidence adduced below shows that this was not the case and that the Qumran calendars also document only the twenty four member list of 1 Chr. 24:7–18.

For a long period, scholarship on the scrolls focused all, or nearly all, attention upon the solar calendar of the group. Milik disclosed long ago that the movements of the moon also played a role in the calendars of Qumran, and the more recently available calendrical texts have borne out his point many times over. A number of the newer calendrical texts incorporate a lunar calendar of 354 days into their reckonings and coordinate it with the solar calendar. Many who studied the solar calendar at Qumran believed that the covenanters adhered to the same principles as those found in the Book of Jubilees, in which, as we have seen, the lunar calendar is excluded as misleading, a way of being

seduced into celebrating the festivals of the gentiles. However, the calendrical teachings of the texts from cave 4 are much more akin to those in 1 Enoch 72–82 in which both lunar and solar arrangements are set forth and coordinated, with neither judged to be superior to the other.

THE TEXTS

The principle of organization in the next sections is to present two relatively simple and straightforward texts first; following this, more complicated documents, documents in which several entities are coordinated, are analyzed. The last group to be treated is a set of documents that have a divinatory quality to them.

4Q327 (4QCalendrical Document E^{b})[2]

This serves as a helpful introduction to the cave 4 calendar documents. The few small fragments that have been identified as parts of it have had a confusing history in Qumran scholarship. J.Strugnell and E.Qimron, the editors of 4QMMT (the so-called Halakhic Letter), thought that 4Q327 belonged to 4Q394, the first copy of 4QMMT. In fact, they placed it in the official edition as the first preserved section of the text. Nevertheless, a comparison of the penmanship with which the letters are formed and other features in the document (such as the exceptionally short, list-like lines) with the pieces that do in fact make up the first copy of 4QMMT (4Q394) shows that the calendrical fragments (4Q327) did not belong to 4Q394 but came from another manuscript.[3]

The surviving portions of text are brief and may be quoted in full:

1 i The sixteenth falls on a sabbath. The twenty-third falls on a sabbath. The thirtieth

1 ii falls on a sabbath. On the twenty-second falls the feast of oil. Af[ter the sabbath […] the offering of

2 i The twenty-third falls on a sabbath. The thirtieth falls on a sabbath.

2 ii falls on a sabbath. On the twenty-eighth a sabbath falls on it. After the sabbath the [fe]stival of […][4]

2 iii falls [on a sabbath.] The eleven[th] falls on a sabbath. The eighteenth falls on a sabbath. The twenty-fifth falls on a sabbath. The second of the month

What we have in this text appears to be a simple list of all the dates on which the sabbath and the festivals fall. The dates that are preserved fit precisely in the 364-day year known from 1 Enoch, Jubilees, and other Qumran texts. In that calendar, the second, fifth, eighth, and eleventh months have sabbaths that fall on the sixteenth, twenty third, and thirtieth. This means that the first surviving lines are listing the sabbaths for one of these months. The allusion to “the feast of oil” in 1 ii 2–5 could help in sorting out which of these months is the one under consideration at the beginning of the text. If we keep in mind that the Temple Scroll describes a festival of the New Oil which occurs fifty days after the Festival of New Wine and one hundred days after the Festival of Weeks which falls on 3/15, then the extant part of the text must begin with the fifth month and the oil festival must be on the twenty second day of the sixth month. Some caution is in order because the word for “oil” here is not the same as the one employed in the Temple Scroll, but it is difficult to imagine that different oil festivals would be meant in the two

documents. The offering that is mentioned after it should be the wood offering that Yadin dated to 6/23–6/29.

There is some debate about the correct location of the fragments. Since the pattern of sabbaths repeats itself every fourth month, pieces containing references to sabbaths in a single month could conceivably be located in four different positions.

With the limited amount of information in the fragments, one could reconstruct the full text for a solar year, although the wording does vary slightly throughout the preserved portions—that is, it is not completely formulaic. The only item that is not a sabbath or a festival is the reference to an offering just after the note about the Festival of Oil. In other words, everything in the text is religious or cultic in nature.

4Q317 (4QPhases of the Moon)

The document is also known as 4QAstronomical Cryptic because it is written in a cryptic script. The text is of interest because it not only fails to employ the priestly courses but also neglects to add any religious or cultic feature. Its extant portions are purely and schematically descriptive of what percentage of the moon's surface is light or dark on a particular date in a month.[5] In this respect it resembles, as Milik noted, the luni-solar calendar of 1 Enoch: "In it the phases of the moon are described, on a scale of fourteenths of the area of the full moon, for the successive days of the solar year of 364 days". (Milik 1976:68) A short citation gives the flavor of the text:

> 1 […] … […] 2 [On the] fifth (day) of it (the month) [it is covered for] 3 twelve (fourteenths,) and thus [enters the day. On the sixth of it,] 4 it is covered for thirteen, and thus it enters the day.] 5 On the seventh of it, it is co[vered for fourteen, and thus] 6 enters the day. *Blank*

Clearly we have here the last days in the process of the moon's waning. A text such as this demonstrates that the calendars of Qumran found their closest analogs in 1 Enoch, not in Jubilees which rejects any use of the moon in calendrical calculations.

Calendrical documents that incorporate the priestly courses

Qumran cave 4 yielded a series of texts in which calendrical sequences are aligned with the names and periods of service associated with the twenty four priestly watches.

4Q320 (4QCalendrical Document A or Mishmarot A)

The first of the works to which scholars have assigned the name "Calendar Document" is a fairly extensive text of which some parts are quite well preserved. The treatment below is not in the order of the fragments but in units, moving from the simpler to the more complex.

First we examine frg. 4 iii–vi. While this piece is only a part of a longer calendrical text, these four columns form a unit of their own. They set forth a listing of the religious holidays in a cycle of six years of 364 days each, and they date those festivals by the

priestly course on duty during the festal days, and by the number of the day within their week of duty. It begins the sequence in this way:

> 4 iii 1 The first year. Its festivals: 2 The 3rd, on the sabbath[6] of Me‘zayah, the passover. 3 The 1st [of] Yeda‘[yah, the waving of the sh[eaf.] 4 The 5th of She‘orim, the [second] Passover. 5 The 1st of Yeshu‘a, the feast of weeks. 6 The 4th of Me‘ozayah, the day of remembrance. 7 The 6th of Yeoyarib, the day of atonement 8 [in the seventh mo]nth. *blank* 9 The 4th of Yeda‘yah, the feast of tents.

At this point, following another blank space, the enumeration for the second year begins. All that is needed to clarify the text is the list of twenty four priestly courses from 1 Chronicles 24 and the pattern for the 364-day calendar. Once this information is found it is obvious that the writer is using the 364-day calendar, and, as a bonus, the dates for the waving of the omer sheaf and the Festival of Weeks are divulged. Me‘ozayah (=Maaziah) is the twenty fourth and thus the last priestly division in 1 Chronicles 24, and for the year under consideration the Passover occurs in the third day of its week (=sabbath) of service in the temple. That is, in this year Me‘ozayah’s week must begin on the twelfth of the month, as Passover, according to biblical legislation (e.g. Exod. 12:6) and many other sources, falls on the fourteenth of the first month. 1 Chronicles 24 names as the first and second priestly courses Yeoyarib (=Jehoiarib) and Yeda‘yah (=Jedaiah). Therefore, after Me‘ozayah’s week of service at the temple would end on the eighteenth of the first month, Yeoyarib would next come on duty for seven days, after which Yeda‘yah would relieve him. That is, Yeoyarib would be on duty from the nineteenth until the twenty fifth of the first month, with Yeda‘yah’s stint of duty beginning on the twenty sixth. The text says that the waving of the sheaf (the omer) occurs on this date (the first day in his week). As we have seen, determining this date for the wave offering was a vital accomplishment of D.Barthélemy, one that allowed him to understand the entire 364-day system and the date of the Festival of Weeks in it. The present text objectively confirms what he had inferred from less secure evidence; most importantly, it verifies his claim that the Festival of Weeks or Pentecost falls on 3/15, the fiftieth day after the omer was waved on 1/26.

If we follow the Chronicler’s list of the twenty four priestly courses and calculate which seven-day span each would be on duty in the temple, we learn that 4Q320 dates the second Passover to 2/14, the Festival of Weeks to 3/15, the Day of Remembrance to 7/1, the Day of Atonement to 7/10, and the Festival of Booths to 7/15. Some of these dates simply reproduce biblical data (Passover, Second Passover, Remembrance, Atonement, and Booths), but, as we saw earlier, the omer-waving and the Festival of Weeks lack specific dates in Scripture and became disputed points among different Jewish groups.

The same dates for festivals emerge, of course, for years one to six of the cycle, but the fact that there were only twenty four priestly courses meant that the weeks in which a priestly group was on duty moved throughout the year.[7] Therefore, the date on which a festival fell involved a different course for each of the six years. It is likely that the text did not include an enumeration for the seventh year in such a cycle because it would be a duplicate of the first year; perhaps for this reason no seventh year listing is to be found on any of the fragments.

The text yields a list of the festivals accepted by the author, but it does not include all those named in the Temple Scroll (it has no mention of the third and fourth pentecontad festivals, that is, wine and oil, and names only one, rather than the four, days of remembrance as in Jubilees). Why the listing should be less complete in this text is not said, but it does tally more closely with scriptural passages such as Leviticus 23 and Numbers 28–9 than with the Temple Scroll. One other implication should be noted. We have seen that sources such as Josephus say the priestly courses changed on the sabbath. All of the dates in our text, however, show that Sunday was the first day counted in the courses' stints of duty, whenever the actual transfer may have taken place.

Two other passages in 4QCalendrical Document A reveal the extent to which the calendrists in this tradition took their system of coordinating dates and names of priestly courses. Frg. 1 i 1–5 read: "[…] to display itself from the East [and] shine [in] the centre of the sky, at the base of the [va]ult, from evening to morning, on the 4th (Wednesday) of the sabbath of[8] [the sons of Ga]mul, in the first month of the [fi]rst year". Later, in frg. 2 i 2–5 the text says: "The holy […] holy creation […] the 4th of the sabbath of […] beginning of all the years." The most reasonable hypothesis is that both texts are speaking, not about a first year of a six- or forty nine-year cycle, but about the first year of the creation and are indicating that, had it existed then, the course of Gamul would have been serving at the very beginning of world history, that is, during the creation week described formulaically in Genesis 1. The Bible itself assigns creation of the sun, moon, and stars to the fourth day of the first week (Gen. 1:14–19), so that time as reckoned by solar and lunar revolutions would have begun on this Wednesday. The fourth day of the week, therefore, served as the starting point for the calendrical list matching dates and priestly courses. A passage such as this one from 4Q320 demonstrates the connection between heaven and earth, between the creation and the cult, that Albani highlighted in his statement cited earlier (see p. 74).

Another interesting point follows from this short section of 4Q320. The text reports that on the first day of month one in the first year of the world, the moon was shining from evening to morning in the centre of the sky. Such wording strongly suggests that we are not dealing here with the new moon, which would not have been visible in this manner, but rather with a full moon. That is, the full moon would have been present at the beginning of this lunar (and solar) month and, in fact, at the beginning of measured time. This is our first indication that, for this tradition, the lunar month began with the full moon, not with the lunar crescent.[9] One wonders whether the scribes prepared tables that would have recorded the system of mishmarot for all the years from creation to the present, using one of the chronological schemes attested in the ancient versions of the Bible. As 4Q320 implies, such a possibility cannot be ruled out.

Other parts of 4Q320 (4QCalendrical Document A) present a more elaborate and complicated coordination of data. Beginning in frg. 1 i 6 and continuing through col. iii we find a sequence that can be illustrated by quoting just a few lines. At first it seems baffling, a meaningless set of numbers, but the import of the figures can be ascertained through paying close attention to the details:

> 1 i 6 [The 5th (Thursday) of (the week of) Yeda'y]ah (corresponds) to the 29th (and falls) on the 30th of the first (month). 7 [The sabbath of Ha]qoz, (corresponds) to the 30th, on the 30th of the second. 8 [The first (Sunday)

> of Elya]shib, the 29th, on the 29th of the third. 9 [The 3rd (Tuesday) of Bil]gah to the 30th, on the 28th of the fourth. 10 [The 4th (Wednesday) of Petay]yah, to the 29th, on the 27th of the fifth.

When one sees the sequence unfold over a larger number of lines it becomes evident that, as the parenthetical words in García Martínez's translation make clear, the first ordinal in a sequence refers to the number of the day in the week of service of the priestly course that is named, the second ordinal designates the number of the day in the lunar month in question (it is always the twenty ninth or the thirtieth, that is, the last day of a lunar month which, as we have seen, always consists of either twenty nine or thirty days in the Enochic calendars), and the third ordinal identifies the date in the specified solar month.[10] The information found in frg. 1 i–iii extends the coordination of these three items over a three year period, for the last of which there is an intercalated thirteenth lunar month.[11] In a three-year period the schematic lunar year of 354 days (six months of twenty nine days and six of thirty days) would fall behind the solar year of 364 days by thirty days; as a result, a thirty day month had to be intercalated every three years to bring the two back into harmony.

The second fragment of 4Q320, from which two columns are partially preserved, offers hints of an even larger system (one reads expressions such as "holy creation", "beginning of all the years", "year of the second jubilee") and records how many days there are in each solar month (perhaps the name of the serving priestly course was also specified). Frg. 4 ii again refers to various units of time, and some of them are quite large and are apparently related to the courses: "10 the days, the weeks, 11 and the months, *Blank* 12 the years, the Releases[12] 13 and the jubilees. 14 On the sabbath of the sons of Gamul."

4Q319 (4QOtot [=signs])

One of the more intriguing and, at first sight, more baffling calendrical texts—one that has been subjected to a relatively large amount of scholarly attention—has received its name from its repeated use of the Hebrew word for "sign" (*'wt;* cf. Gen. 1:14). The text is especially significant because, while it has been given a separate number in the sequence of texts from Qumran cave 4 (a 4Q number), it is likely that it forms part of 4Q259 which is one of the copies of the Rule of the Community *(srk hyhd)* from the fourth cave.[13] That is, this calendrical document was part of the sectarian composition that seems to have served as a sort of constitution for the Qumran community. Or, at the very least, it was placed there in one copy of the Rule of the Community. Its placement as a component of the Rule thus demonstrates once again how central calendaric issues were to this group (García Martínez 1996a:336–7). Milik regarded 4Q259 as the oldest copy of the Rule of the Community, dating it to the period 150–100 BCE, but F.M.Cross assigned the unusual script to *c*. 50–25 BCE.[14] It appears that the calendrical portion, which is found only in this one copy of the Rule, belonged at the end of the work and that its place was later taken by the long poem that concludes the complete cave 1 copy (a poem in which, as we have seen, the times are mentioned frequently).[15] García Martínez thinks that 4Q319 contained data about a six-jubilee period, that is 294 years,[16] not a seven-jubilee span of time.

The text is monotonous but once its repeated expressions are understood some problems disappear and the system becomes more transparent.

> Col. 5:11 […] (the) creation. In the fourth (year), the sign of Gamul. In the Release, the si]gn of 12 [Shekaniah. In the thi]rd, the sign of Gamul. In the sixth, the sign of [Shekaniah. In the second, the sign of Ga]mul. 13 [In the fifth, the sign of Shekaniah. After the Release, the sign of Ga[mul. In the fourth, the sign of Shekan]iah. 14 [In the Release, the sig]n of Gamul. In the third, the sign of Shekaniah. [In the sixth, the sign of Ga]mul.

The two priestly courses Gamul (the twenty second in 1 Chronicles 24) and Shekaniah (the tenth in the list; thus the two are twelve positions or half of the twenty four member list apart from each other) are repeatedly mentioned as having or being a sign in certain years of a seven-year cycle. In that sabbatical cycle the seventh year is always called "the Release" and the first year of the new cycle that follows it is named "the (year) after the Release". The signs appear at three-year intervals within units of seven years: years one, four, seven in one sabbatical period, years three, six in the next one, and years two and five in the third, with the cycle repeating itself by beginning with 1 in the fourth, etc. The meaning is that either the priestly course of Gamul or of Shekaniah was on duty at the beginning of that particular three-year unit and therefore, in the parlance of 4Q259, that period was under its sign.[17] The text arranges such information for a span of 294 years, that is, six jubilees of forty nine years each.[18] The total of 294 years is the largest unit of years that is attested in the Qumran calendrical texts,[19] and here, too, the system is traced back to creation. The text adds other details at fixed, recurring intervals. After he gives the data for a jubilee period, the author adds up the number of signs in it and the number of signs that happened to fall in a year of release (that is, in the seventh year of a sabbatical cycle). For example, 6:12–13 reads: "The /fourth/ [jub]ilee has seventeen signs: 13 from the last up to the Release two /signs/ of (the cycle of) [Gamul] (remain)".[20]

While not all details of the text are as clear as we would like, it does make us wonder why a calendrist took the trouble to calculate the data and why scribes took the pains to record them. One possibility that has been proposed is that 4Q259 serves to mark the times for inserting intercalary periods. Scholars had, of course, proposed, long before 4Q259 became available, that the 364-day calendar would have required intercalation if it was to be practicable for the Qumran group over a period of two centuries (VanderKam 1979:406–7; Albani 1992:36–7, n. 87). After more of the calendrical information from cave 4 became accessible in the early 1990s, Glessmer proposed a system of intercalation that was based on 4Q319 (see figure 1). Although Milik had understood the text to be employing years as the units in seven jubilee periods,[21] Glessmer proposed that each unit was actually a seven-year period (Glessmer 1991:379–98). So, rather than having seven years in each sabbatical unit, the number would be forty nine years. If we calculate the number of days in seven periods of forty nine years (343 years) in the true solar calendar of 365.25 days, the amount is 125, 280.75. The same span of time in the 364-day calendar would be 124, 852. Glessmer calculated that if seven days were added every sabbatical period, one would have an extra 343 days. Adding these to 124, 852, the sum would be 125, 195. This would leave 85.75 days between the sum and the number of days for these years in the actual solar year. The signs in the non-Release periods in

4Q319 fit here. For Glessmer they designate the intervals in the cycles where an extra intercalary week was added. It turns out

	True solar year	*364-day solar year*	*difference*
1 year	365.25	364	1.25
7 years	2556.75	2548	8.75
49 years	17,897.25	17,836	61.25
343 years	125,280.75	124,852	428.75

Methods for intercalating the extra 428.75 days
1 7 days every 7th year = 343
2 7 days at each of the 12 signs = 84
3 7 days over four units of 343 years, that is, 1.75 for each 343-year period = 1.75
Total = 428.75

Figure 1

that an extra twelve weeks would thus supplement the calendar, yielding eighty four days more and leaving the sum total only 1.75 days shorter than the days in 343 true solar years. Those days could be made up if one added seven days at some point over four of these 343-year periods, that is, in a 1,372-year period (4×1.75=7). The times when the divisions of Gamul and Shekanyah are said to be in, or after, the Release are times when no intercalary week was added and thus they are specially noted.

The exact form of Glessmer's intercalary hypothesis proved to be inaccurate when the full text of 4Q319 became available, but the basic contours of his system may still be valid. He believed that seven days were intercalated into the 364-day system after every sabbatical or seven-year cycle. During that time the true solar year (365.25 days) would be 8.75 days longer than in the 364-day calendar (7×1.25). Adding a week would supply most of the additional days that were needed but would still leave the system 1.75 days short after seven years. The "signs" of 4Q319 could still designate the points in the calendar when supplemental units of seven days were intercalated. In a forty nine year period, when the 364-day system would lag behind the true solar year by 61.25 days, adding seven days every sabbatical period would yield forty nine of them. There are seventeen signs in such a period, with five being either in or after the Release. If, in fact, these were noted because no intercalation took place in them, the remaining twelve signs would have to be periods for adding an extra day (they were times for adding an extra seven days in Glessmer's original calculations, but these would now have to be reduced seven-fold). The total would then be 49+12=61, leaving only a fraction of a day (0.25 days) to explain, and it could be handled by adding a day after twenty eight years.[22]

It is likely that the signs of 4Q319 have something to do with a system of intercalation that would bring the 364-day system into harmony with the true solar year. Whether that system is the more complicated sort that Glessmer suggests or a simpler one reconciling the schematic lunar and solar calendars every three years, the text does point to some intercalary system and thus to an interest on the part of the author(s) in making the calendar practicable over very long periods. This in itself would be an important

conclusion because it would remove the 364-day calendar from the realm of the abstract and verify that the residents of Khirbet Qumran could actually have put it into effect.

4Q321 (4QCalendrical Document B[a])

A final document that coordinates solar and lunar dates with the priestly courses from 1 Chronicles 24 introduces another problem into decoding the Qumran teachings about the calendar. As Talmon and Knohl who published the text commented, it is a text "in which two specific dates in each lunar month are coordinated with two dates in the solar calendar in a six-year cycle. At the same time these dates are also riveted to the service roster of the priestly courses". (Talmon and Knohl 1995:270) They found that two principal sections are represented on the extant fragments, with both covering a six-year or seventy two-month cycle. About the initial part they say:

> (a) In the first list (cols. 0I 1–IV 8) two days are recorded seriatim in each of the seventy two lunar months. One is specified by dating it to such and such a day in the week of service of a given priestly course, which coincides with such and such a date in the solar calendar. Since it is not identified by a specific appellation, we propose to call this day X. The other day is specified by the same parameters, but in addition is also designated *duqah.*

The second part they describe thus: "(b) The latter part of the scroll contains a roster of the date of each biblical festival in reference to the pertinent week of the service of the relevant priestly courses" (Talmon and Knohl 1995:292, 293). The following passages, taken from their translation,[23] illustrate the nature of the text. The first part reads thus:

> Col. 1:6 *vac* The] se[cond] {year}: The first {month}. On the sec[on]d {day} in {the week of} Malchijah {which falls} on the twentieth in it {the first month}; and] *duqah* {is} 7 [on the third {day} in {the week of} Harim {which falls} on the seventh] in it {the first month}.

The second part follows this pattern:

> col. 4:8 *vac* The first y]ear: {The first day of} the fi[rst mo]nth {falls} in {the week of} [Gamul; on the th]ird {day} in {the week of} Mo[aziah] in it {falls} 9 [the Pesah[24]'; in {the week of} Jedaiah in it {falls} the Swinging of the Omer.

While much of what is recorded in a text such as 4Q321 is by now familiar, the meaning of the term *duqah (dwqh)* remains the subject of a dispute. For Talmon and Knohl it was "the designation of the day in the middle of the lunar month that is preceded by the night in which the full moon begins to wane, and X as the day at the end of the lunar month that follows upon the night in which the moon is in full darkness" (Talmon and Knohl 1995:297). That is, the mystery day X is before the new moon and *duq* occurs just after the full moon. The two items, X and the one designated *duqa (dwqh)* or *duqo* (*dwqw;* that

is, the noun *dwq* with a suffix), appear at fixed intervals: X comes thirteen days after *duq* or precedes *duq* by sixteen or seventeen days. In contrast to Talmon and Knohl, Wacholder and Abegg construe the X date as the full moon and *duq* as the new moon (Wacholder and Abegg 1991:68 and Appendix C) and M.Wise has maintained that *duq* refers to the time when the moon is full, while X is the first day when the moon is invisible.[25] A careful study of the evidence leads to the conclusion that the X date is probably the full moon and *duq* should designate a time around the appearance of the lunar crescent; moreover, in this system, the full moon is the time when the month begins.[26] Evidence for this conclusion comes from the etymology of the word *duq* which suggests the notion of careful observation. People who live with a lunar calendar observe carefully when the new moon can be sighted so that the numbering of days in the new month can begin. So, one would think that the word *duq* in 4Q319 would be more likely to have reference to the new moon than the full moon. It should be recalled that 4Q320 seemed to imply that the full moon was the beginning of the month. It may also be that a medieval source documents the existence of such a system that does not start the month with the lunar crescent but with the full moon (VanderKam 1994:382–3).

4Q321 serves to highlight once more that the Qumran community operated with both solar and lunar data, not just the solar calendar, and synchronized the two with the weekly duty of the twenty four priestly divisions in the temple.[27]

Poorly preserved calendrical texts:

There are several other calendrical documents whose tattered remains have shown up in Qumran cave 4.[28] They are listed here and described very briefly.

a 4Q321[a]=4QCalendrical Document Bb (Mishmarot B)
4Q321[a] is a copy of the same work as 4Q321, and it also mentions the *duq* and gives the same kinds of data as one finds in the first part of 4Q321. No text that parallels the second part of 4Q321 has been preserved and identified among the pieces.

b 4Q322=4QCalendrical Document Ca (Mishmarot Ca)
The few small fragments that have been assigned to 4Q322 speak about the times when the priestly courses enter their week of service. There also appears to be an allusion to ones who are cursed and perhaps also to the Kittim, the foreign enemy of Israel (frg.1). The second fragment (line 4) mentions Shelomzion *šlm ywn* who must be Alexandra Salome, the Hasmonean queen of Judea from 76 BCE (when her husband Alexander Jannaeus died) until 67 BCE when she was succeeded by her son. It is possible that King (?) Hyrcanus is mentioned in line 6; this would probably be the Hasmonean ruler Hyrcanus II who reigned from 63–40 BCE. Frg. 3 refers to an act of killing (line 1) and the fifth day in the week of Jedaiah. In other words, in a text in which the priestly courses play a part, historical characters and events are recorded; they may also have been dated. This is yet another practical use to which such a listing could be put (see below for 4Q324[a-b]). It should also be noticed that the characters who appear in the text lived in the first half of the first century BCE.

c 4Q323=4QCalendrical Document Cb (Mishmarot Cb)
Only a few small fragments have survived from this copy of the calendrical document. The first one mentions several of the priestly courses and notes the entry of one (line 3) into service. Frg. 2 also refers to entering. The month name *Marcheshvan*

may be mentioned in frg. 5 7.

d 4Q324=4QCalendrical Document C[c] (Mishmarot C[c])
Frg. 1 notes entry of priestly courses on specific dates,

e 4Q324[a]=4QCalendrical Document C[d] (Mishmarot C[d])
While the language for entry of priestly divisions on specific dates is used in frg. 1 col. ii (and in frg. 3), frg. 2 says that "Aemilius killed" (lines 4 and 8) in a context in which the priestly courses are being listed. As in 4Q322, we have reference here to a historical character and event(s); Aemilius is usually identified as M.Aemilius Scaurus who served as governor of Syria after Pompey's capture of Jerusalem in 63 BCE.

f 4Q324[b]=4QCalendrical Document C[e] (Mishmarot C[e])
Frg. 1 line 5 again mentions Salome *(šlm yon)*, while frg. 2 line 4 may refer to a high priest and line 5 mentions a Yohanan.

g 4Q324[c]=4Qcrypt A Calendrical Document C[f]
The work is copied in a cryptic script (like that of 4Q317) and consists of seventeen fragments, no one of which preserves more than one or two broken words.[29]

h 4Q325=4QCalendrical Document D (Mishmarot D)
The text lists sabbaths and festivals (with the beginnings of the months) and coordinates them with priestly courses in the 364-day system,

i 4Q326=4QCalendrical Document E[a] (Mishmarot E[a])
The single fragment mentions sabbaths in a first month and at the beginning of a second. (4Q327=4QCalendrical Document E[b] [Mishmarot E[b]] was treated above.)

j 4Q328=4QCalendrical Document F[a] (Mishmarot F[a])
The one fragment lists the priestly courses at the beginning of a year and at the beginning of each quarter of a year,

k 4Q329=4QCalendrical Document F[b] (Mishmarot F[b])
The first fragment mentions courses for each year (four each year), and the second also refers to the courses.

l 4Q329[a]=4QCalendrical Document G (Mishmarot G)
The one fragment names the courses in which Passover occurs possibly for the first five years of a cycle,

m 4Q330=4QCalendrical Document H (Mishmarot H)
There are references to the courses, years, and a week; the second fragment may mention the release in line 3.[30]

Astrological texts

Another set of documents from the Qumran caves shows that the schematic information about the luminaries could be applied to divinatory purposes. Although it may appear surprising that a group as conservative as the Qumran covenanters would engage in astrological exercises, it has been pointed out that the assumptions of astrology would be compatible with their deterministic theology.

4Q318

(4QAramaic Brontologion; a zodiac) shows something of the range present in Qumran treatments of astronomical/astrological topics. There appear to be two principal parts to the text: a description of the course of the moon as it moves through the twelve signs of the zodiac within a year (frg. 1–2 ii 6), and the astrological predictions about events made on the basis of the appearance of thunder in a certain zodiacal sign (Albani 1993:12). A sample or two will illustrate the character of the text.

> Frg. 1 5 [(Month of) Tishri: On the 1st and on the 2nd, Scorpio. On the 3rd and on the 4th, Sagittarius. On the 5th, on the 6th and on the] 7th, Capricorn. On the 8th
>
> Frg. 2 ii 6 Aries. *Blank* If it thunders in the sign of Taurus, revolutions (in) the wor[ld…] 7 problems for the cities and destruction in the cour]t of the King and in the province of […]

The text shows that, unlike the Enochic presentation of the lunar stages, the author of this text did not avoid the zodiac and what was associated with it; here we have a writer who makes blatant use of the resources of astrology. Perhaps it is not surprising that such a text should surface at Qumran because the determinism of the group would be compatible with the assumptions of astral divination. Albani maintains that the text is based on neither a 364-day[31] nor a 354-day calendar but on one with twelve schematic months of thirty days each—a system known, as we have seen, from the Astronomical Book of Enoch and older Mesopotamian texts (such as MUL.APIN).[32] He also does not think the work is of Qumran origin.

4Q186 and 4Q561

In this connection it is useful to mention 4Q186 (Hebrew) and 4Q561 (possibly a copy of 4Q186 but in Aramaic) which relate astrological themes directly with the governing theology of the Qumran community. The text is written left to right, not in the expected direction of right to left, and it has some letters in different scripts. 4Q186 frg. 1 ii 5–8 reads:

> 5 And his thighs are long and slender, and the toes of his feet are 6 slender and long. And he is in the second position. 7 His spirit has six (parts) in the house of light and three in the pit of 8 darkness. And this is the sign in which he was born: the foot of Taurus. He will be poor. And his animal is the bull.

That is, this individual belongs mostly (2/3) in the house of light and less (1/3) in that of darkness, and astrological predictions are made on the basis of this and of his zodiacal sign. Other ratios occur elsewhere in the text, but the total is nine in each case. The language of light and darkness is, of course, fundamental to the limited dualism of the Qumran community.

While we can understand the broken text reasonably well, some terms remain unclear. For example, what is meant by “the second position” and “the foot of Taurus” and why do the portions of each person total nine? Albani, in his forthcoming contribution “Horoscopes” in the *Oxford Encyclopedia of the Dead Sea Scrolls*, has found an instructive parallel in a Greek astrological text of Teukros Rhetoricos. In it the sign of Taurus is sub-divided into nine parts, corresponding with parts of the body, starting with the head and working down to the feet, tail, and claws. These rise over the eastern horizon in the expected order. As Albani writes, in this scheme the feet of Taurus are located in the seventh position, that is, six portions had emerged over the horizon before the feet—something that explains the ratio of six parts in the light and three in the darkness for the fragment cited above. The six parts already risen above the horizon are in the house of light, while the other three parts remaining beneath the horizon are in the darkness. Albani, following a proposal by R.Gordis (Gordis 1966:38), also suggests that the term *rwh* in the ratio expressions is the segholate noun meaning “space, room”, not the familiar word for “spirit”. This notion, too, has parallels in astrological texts.

A SUNDIAL

Although it should not be classified as a calendrical text, this is a convenient place to mention the sundial that was found during R.de Vaux’s excavations at Khirbet Qumran in 1954 (it was given the number 1229). It lay unnoticed until the Summer of 1994 when Albani and Glessmer rediscovered it and identified it for what it is. It takes the shape of a circular disk and is made of limestone. It measures 145 millimetres in diameter, has a depression in the centre that could hold a stick or small post, and has the letter *ayin* written on the bottom of it. Around the center hole (which does not go all the way through the disk) and progressively farther away from it are three pairs of concentric circles; many linear marks join the two rings that make up the pairs of circular lines. The estimates are that there were approximately sixty marks between the inner rings, seventy two between the middle ones, and about ninety between the outer ones. The post in the centre of the sundial served the function of casting a shadow. The length of the shadow (how far it extended toward the outer circumference of the sundial) and position (measured by the marks in the rings) allowed the user to determine the season and hour of the day. It was also an instrument precise enough to identify the four cardinal days, the days that marked the passage from one season to another (see Albani and Glessmer 1997:88–115; Roitman 1997:18–22).

The existence of this sundial is a practical illustration of the role the sun played in measurements of time at Qumran. The community did not leave its proper observance of the times to chance but measured them with a precise instrument so as to obey the divine commands about times and seasons with greater exactitude.

7
MEASURING AND SYMBOLIZING LONGER UNITS OF TIME

Until now we have examined the ways in which ancient Jewish writers expressed their notions about the annual calendar and about the smaller units of time that composed the years. There is also evidence in the sources that some writers made attempts to order or arrange periods much longer than a single year. These attempts have their roots in the Hebrew Bible in which one finds several ways of arranging and delimiting eras.

EVIDENCE FROM THE HEBREW BIBLE

Chronology

There is a series of passages in which the biblical narrators indicate that a large number of years elapsed between two events. The very existence of such statements shows that they were operating with some sort of chronological system or understanding. Thus, Exodus 12:40–1 says that the Israelites had lived in Egypt 430 years to the day (see, however, Gen. 15:13 where Abraham is told that his descendants would remain in Egypt for 400 years or, according to verse 16, four generations). There is some dispute about this figure because the Septuagint preserves a different chronology in which the number 430 is retained but is divided into two periods: the patriarchs lived in Canaan for 215 years and the Israelites remained in Egypt 215 years. Later, we read in 1 Kgs. 6:1 that some 480 years separated the exodus from Egypt and the beginning of Solomon's temple-building project. Scholars have noted that the figure 480 contains twelve units of forty years, with forty being a common biblical manner of indicating a generation. Thus one cannot be sure about precisely what was meant by a number such as this. In fact, some biblical data lead us to think that perhaps more time passed between these two events. So, to name only one of the component ages, the numbers of years that the judges are said to have ruled and the periods of peace that followed their victories add up to 410 years, although the figure is not mentioned in the text.

The biblical historians also transmitted chronological information for the epochs when kings ruled in the single kingdom of Israel and later in the two realms of Judah and Israel. It was their practice to record the number of years each monarch reigned and attempt a synchronization of the reigns during the divided monarchy. There is some problem with the first king Saul in that 1 Sam. 13:1 attributes to him an improbably short reign of two years which he began at one year of age; the biblical text says that David and Solomon each reigned for forty years (1 Kgs. 2:11; 11:42). For the time of the divided monarchy, the editors of the Books of Kings (and the Books of Chronicles) never stop to total up how many years elapsed during the entire period for either kingdom, but one can easily add their figures to reach the total. It turns out that the Northern Kingdom lasted some 231 years, and the Southern Kingdom continued for 394 years (399 in the Septuagint). If

we add to the figure of 394 years in the Hebrew text the thirty six years that remained in Solomon's reign after he began building the temple and the fifty years that elapsed between the destruction of Jerusalem in 587/6 and the return from exile in 538/7, the period from the inception of Solomon's temple to the return from exile is another 480 years.[1] Not surprisingly, experts have suspected that the chronology involving all these combinations of forty years is schematic rather than absolutely precise, although solid historical information could underlie much of the system. In particular, it has been difficult to reconcile some details of the regnal years for Israelite and Judean kings with the securely dated events of ancient Near Eastern history and even with the synchronisms stated in some passages.[2]

Such sets of regnal years and totals are only a part of a more systematic attempt to work out a chronology for the entire biblical period and beyond. There is some reason for believing that a carefully arranged chronology underlies all of the numbers in the Hebrew Bible and unifies them toward a common end. J.Hughes sets out the year in which, according to the Masoretic Text, major biblical events occurred as follows:

Flood	1656 (=year of the world)
Abraham	1946/8
Entry into Egypt	2236/8
Exodus	2666/8 (i.e. 430 years were spent in Egypt)
Foundation of temple	3146/8 (i.e. 480 years after the exodus)
Destruction of temple	3576/8 (i.e. 430 years after the foundation)[3]

Hughes notes, as have others, that:

> if we ignore the two-year period between the flood and the birth of Arpachshad [this is the source of the two-year discrepancy in several of the numbers above], MT's date for the exodus is two-thirds of the way through a 4,000-year era. If this is a deliberate feature of the chronology, then one of the effects of this revision of the MT's chronology is to give greater prominence to the exodus and the events at Sinai, and this agrees with the importance of these events in later Judaism.[4]

But if the exodus is consciously placed at the two-thirds point, what happened in the year of the world 4000? If one assumes that the year of the destruction of the temple was, as contemporary scholars think, 587/6 BCE, then, with year of the world 3576 being the same as 587/6, 424 years later (that is, the year 4000) would be 164 BCE. In 164 BCE the temple was rededicated under the leadership of Judas Maccabeus (1 Macc. 4). Hughes writes that if "we apply the postdating system used in the original version of Priestly chronology, the first year of the rededicated temple is exactly 4,000 years from the creation of the world."[5] Two implications are that the scriptural chronology would not have been finalized until at least the early Maccabean period and that it would have culminated in an event that is not part of the storyline in the Hebrew Bible. Although one could debate the issue, it appears to be more than mere coincidence that the numbers work out so exactly.[6]

Sabbatical chronology

There is another set of chronologically significant numbers in the Bible that are related to the number seven. The shortest fixed unit is probably the sabbatical period or seven years which Exodus, Leviticus, and Deuteronomy prescribe for rejuvenating the land and society. The Israelites were to farm their land and tend their vineyards for six years, but "in the seventh year there shall be a sabbath of complete rest for the land, a sabbath for the Lord" (Lev. 25:4). According to Exod. 23:11 the reason for the law is so that poor Israelites and wild animals could eat what grew of itself. There are references in the historical sources that sabbatical years were in fact observed, and they note some of the hardships caused by the lack of normal crops. For example, in the time of the Maccabees (perhaps in 162 BCE), we are told, the Jewish residents of Beth-zur found they had no choice but to surrender to the Seleucid forces: "they evacuated the town because they had no provisions there to withstand a siege, since it was a sabbatical year for the land" (1 Macc. 6:49; see also 6:53–4 where the conditions are termed a famine.)

In addition to the sabbatical periods, the Bible also legislates a jubilee year, the fiftieth year after seven sabbatical periods had run their course. It, too, was to be marked by no planting or harvesting (Lev. 25:11–12). There is no historical report that the jubilee, which would have been the equivalent of a second consecutive sabbatical year, was ever observed in antiquity, but Leviticus stipulates that in the fiftieth year land which had been sold outside the family was to revert to its original owners and Israelites who had been reduced to slavery were to be freed: "And you shall hallow the fiftieth year and you shall proclaim liberty throughout the land to all its inhabitants. It shall be a jubilee for you: you shall return, every one of you, to your property and every one of you to your family." (Lev. 25:10) It may be that the year of jubilee was retained more as an ideal than as a practical reality. Isa. 61:1–2a suggests as much when the prophet says:

> The spirit of the Lord God is upon me,
> because the Lord has anointed me;
> he has sent me to bring good news to the oppressed,
> to bind up the brokenhearted,
> to proclaim liberty to the captives,
> and release to the prisoners;
> to proclaim the year of the Lord's favor….

This "year of the Lord's favor" is often taken to mean the year of jubilee (see also Luke 4:18–19.)

While the biblical legislation includes provisions for sabbatical and jubilee years, the prophet Jeremiah introduced another number, also a multiple of seven, that was to have major repercussions in later chronologies. Jeremiah, on two occasions, proclaimed to his audience that the exile of Judeans from their land would not last the short time predicted by false prophets but would continue for seventy years. The first occasion is recorded in chapter 25. There, in the fourth year of King Jehoiakim (605 BCE), he predicts:

> This whole land shall become a ruin and a waste, and these nations shall serve the king of Babylon seventy years. Then after seventy years are completed, I will punish the king of Babylon and that nation, the land of

> the Chaldeans, for their iniquity, says the Lord, making the land an everlasting waste.
>
> (vv. 11–12)

In verse 11, where the Hebrew text says that the nations will serve Babylon for seventy years, the Greek translation reflects a reading that differs by one letter but suggests another way of understanding the statement: the people of Judah will serve "among the nations" for seventy years. This latter understanding is more likely to be the original one and is taken up in later readings of the passage.[7] The second passage in which Jeremiah makes a similar prediction is in 29:10 where he is writing a letter to Judeans who are already in exile in Babylon. The date is sometime after *c*. 597 BCE when his addressees had been deported. He urges the exiles to settle down where they are and not expect to return home soon: "For thus says the Lord: Only when Babylon's seventy years are completed will I visit you, and I will fulfill to you my promise and bring you back to this place." That Jeremiah was prophesying the passage of sabbatical periods was understood already by the Chronicler who wrote of the Chaldean king:

> He took into exile in Babylon those who had escaped from the sword, and they became servants to him and his sons until the establishment of the kingdom of Persia, to fulfill the word of the Lord by the mouth of Jeremiah, until the land had made up for its sabbaths. All the days that it lay desolate it kept sabbath, to fulfill seventy years.
>
> (2 Chr. 36:20–1)

The book of Daniel, which was written around the time when Judas Maccabeus rededicated the temple (*c*. 165 BCE), combines the sabbatical principle of seven year periods with the desire to define symbolically a much longer temporal span and, in so doing, it extended an older tradition and exercised a strong influence on others given to calculating times. As we have just seen, the prophet Jeremiah had predicted that Babylon would rule for seventy years before suffering punishment (25:11–12); only after those seventy years were completed would the Lord bring his people back to their land (29:10). In chapter 9 of his book the seer, Daniel, is pictured as studying the seventy-year prophecy of Jeremiah which, as he understood matters, had not yet come true. He offered a prayer of confession and asked the Lord graciously to remember his city and people (9:1–19). The angel Gabriel was sent to explain the matter to him, to help him understand the word and the vision:

> Seventy weeks are decreed for your people and your holy city: to finish the transgression, to put an end to sin…. Know therefore and understand: from the time that the word went out to restore and rebuild Jerusalem until the time of an appointed prince, there shall be seven weeks; and for sixty two weeks it shall be built again with streets and moat, but in a troubled time. After the sixty two weeks, an anointed one shall be cut off and shall have nothing, and the troops of the prince who is to come shall destroy the city and the sanctuary…. He shall make a strong covenant with many for one week, and for half of the week he shall make sacrifice and offering

> cease; and in their place shall be an abomination that desolates, until the decreed end is poured out upon the desolator.
>
> (9:24–7)

There are several points in this passage that are difficult to interpret, but it is at least clear that the seventy years of Jeremiah are here understood to be seventy weeks of years, that is, seventy times seven years, or 490 years. That era is further sub-divided into periods of seven weeks (=forty nine years), sixty two weeks (=434 years), and one week (=seven years), in half of which sacrifice and offering will not occur (=three and a half years). The explicit starting point for the chronology is the time when the order to rebuild Jerusalem went out; this may, unless a divine word is intended, refer to the decree of Cyrus issued in the year 539 BCE. If so, and if the time span was understood by the writer of Daniel 9 in line with modern chronological calculations for the post-exilic period, the 490 years would have ended in about 50 BCE. Or, if the starting point is the date of the oracle to Jeremiah in Jeremiah 29 (after 598), then the end would have come sometime just before 100 BCE. However, there is good reason for thinking that the numbers here are not in line with the modern reckoning of these years in Israel's history because the prince in the passage is almost certainly Antiochus IV (175–64 BCE). In whatever way the numbers of years are sorted out, the point is that in Daniel 9 the entire post-exilic (and perhaps also the exilic) period from the decree to rebuild Jerusalem to Daniel's day is calculated in the suggestive language of weeks of years or sabbatical units. One could also think of the 490 years as ten forty nine-year periods, that is, ten of the units that are marked off by a jubilee year.[8]

THE SCROLLS

Chronology

There is some limited evidence that the people who lived in the area of Qumran were interested in the chronological problems that the Bible raised in a number of instances.

4Q559

One badly preserved text—given the designation 4Q559—discloses enough information to show that the ages of biblical characters were under consideration. Michael Wise describes the issues addressed in the text:

> The problems with which our author wrestled were notorious difficulties for ancient scholars, Jewish and Christian. The problems are: (1) the length of the Israelites' sojourn in Egypt; (2) the chronology of the wilderness wanderings; and (3) the chronology of the period of the judges. In the case of the first problem, the difficulty was to resolve the apparent conflict between the time given for the sojourn by Gen. 15:13–14 (400 years) and that stated in Exodus 12:40 (430 years). For the wilderness wanderings, the difficulty was to derive any sort of chronology at all…. In

> the case of the judges, the main difficulty was to rationalize the implications of a straightforward adding of the time periods given in the book of Judges (410 years). This number presents problems when compared with 1 Kgs. 6:1, which encompasses all the judges and many other events in a period spanning just 480 years.[9]

Too little of the text survives to be sure about the subject or the person referred to in all places and most of the numbers of years must be restored wholly or in part, but the extant portions do show that the three periods to which Wise draws attention were under consideration and that chronological matters were the subject of the text.[10]

Damascus Document

This is perhaps the proper place for mentioning the chronological indications that appear in the Damascus Document. According to this work, found in multiple copies at Qumran but apparently legislating for a wider movement, the group of which the author was a part came into existence at a specific point after Nebuchadnezzar and the Babylonians destroyed Jerusalem.

> And at the moment of wrath, three hundred and ninety years after having delivered them up into the hands of Nebuchadnezzar, king of Babylon, he visited them and caused to sprout from Israel and from Aaron a shoot of planting, in order to possess his land and to become fat with the good things of his soil. And they realised their sin and knew that they were guilty men; but they were like blind persons and like those who grope for the path over twenty years. And God appraised their deeds, because they sought him with a perfect heart and raised up for them a Teacher of Righteousness, in order to direct them in the path of his heart.
>
> (CD 1.5–11)

The same work includes another chronological notice in the final column where it is said that "from the day of the gathering in of the unique teacher, until the destruction of all the men of war who turned back with the man of lies, there shall be about forty years" (CD 20.13–15). It may be that the Damascus Document offers us a glimpse at a work that combines actual and symbolic types of chronology. The argument goes this way. The 390 years from Nebuchadnezzar's destruction of Jerusalem, the twenty years of blind groping, and the forty years after the ingathering (=death) of the unique teacher (=the Teacher of Righteousness) add up to 450 years. If the Teacher himself led his community for forty years, we would arrive at a total of 490 years. But what evidence is there that the Teacher's career spanned forty years like that of Moses, an earlier leader of a community in a wilderness? There is no secure information about the point, but it may be that his leadership is said to have lasted for a generation, and a generation is understood in some biblical calculations as forty years. I.Tantlevskij has argued that the conclusion follows from CD 1.10–12 where, it seems, the Teacher is pictured as revealing God's message for the last generation (the one that would follow his death) in the generation that preceded it ("he made known to the last generations [note the plural form] what he had done for the

last generation" [1:11–12]).[11] This series of conjectures falls short of proving the conclusion, but it is an interesting possibility that the Damascus Document, like the book of Daniel, has a 490-year chronology for the exilic and post-exilic periods (see also the Animal Apocalyse in 1 Enoch which is treated on p. 100).

Sabbatical chronology

The writers of several Dead Sea scrolls stood in the Jeremianic—Danielic stream of chronological calculations. They too resorted to periods of year-weeks and forty nine-year units for their sketches of lengthy ages or epochs. We look now at the texts that they wrote, beginning with compositions that were written before the Qumran community was founded, and continuing with works written by the group.

The Apocalypse of Weeks

The Apocalypse of Weeks (1 Enoch 93:1–10; 91:11–17 in the Ethiopic version; the correct order is found in the Aramaic fragments from Qumran cave 4): The apocalypse, which was composed, it seems, shortly before the Maccabean revolt—perhaps in *c*. 170 BCE—presents itself as a divine revelation to Enoch and encases all of biblical history from creation until the final judgment within a framework of ten weeks. Each of these weeks includes a stretch of biblical history; they continue until the writer reaches the end of the scriptural story. He then moves beyond it to his own time (reached in the seventh week) and continues on through the stages of the final assize. It appears that the author does not assign a uniform length of actual time to each of his weeks, since they seem to cover differing numbers of years in the biblical story. The periods covered are recognizable because an event or person (no names are used) is mentioned in connection with each one of the weeks.

week 1 Enoch's birth
week 2 evil leads to the first end (=the flood)
week 3 election of Abraham as the righteous plant
week 4 a law is made
week 5 a house (=temple) and kingdom are built
week 6 Elijah's ascent to heaven and end of the temple followed by exile
week 7 righteous ones elected to whom sevenfold wisdom is given
week 8 righteous judgment on the oppressors; an eternal house is built for God
week 9 removal of wickedness through judgment
week 10 judgment by angels; first heaven passes away and a new heaven will appear.

The writer says that after this there will be innumerable weeks of righteousness without any sin.

If it is true that the author was living in the seventh week, near its end, then he was writing in what could be called the end of a jubilee-period or at the conclusion of seven weeks of years. His entire chronological scheme encompasses ten week-units or seventy "days," a number reminiscent of Jeremiah's seventy years. Both were plainly understood to be symbolic representations of extended stretches of time, although the writer of the Apocalypse of Weeks incorporates a far longer period in his scheme.

The Animal Apocalypse

The Animal Apocalypse (1 Enoch 85–90): This long, symbolic retelling of biblical history and beyond was revealed to Enoch and is thus packaged in large part as a prediction of what will happen in biblical and early Jewish history. There is reason for thinking the apocalypse was written shortly before 160 BCE, the year when Judas Maccabeus, who is an actor in the vision and whose death is not mentioned, met his end in battle.[12]

It is usually very easy to follow the symbolism of the apocalypse in which animals are used to represent people and people to represent angels. The description is so detailed that anyone familiar with the biblical story line has no difficulty in interpreting it. So, for example, when we read that a cow gave birth to a black boar and white sheep and that the white sheep became the father of twelve sheep, it is easy to identify the cow with Rebekah, the boar with Esau, the white sheep with Jacob, and the twelve sheep with Jacob's twelve sons (89:12).

For the present purposes, only a part of the history predicted in the apocalypse is of relevance. Beginning at 1 Enoch 89:59 the author introduces some characters whom he labels seventy shepherds; the time when God first summons them on the scene to punish the sheep (his Judean people) is before the destruction of Jerusalem and the temple which occurred in 587/6. The shepherds remain on stage until the end when they are judged for exceeding the terms of their punitive commission (90:25). The identity of the seventy shepherds has aroused debate among scholars. It seems likely that the writer has drawn the imagery of sheep/shepherds and the number seventy from Jeremiah 25, one of the chapters in which he prophesies the seventy-year exile. The meaning of the seventy shepherds appears to be that they are the angels who represent the seventy nations of the world (see Gen. 10; cf. Deut. 32:8). Jeremiah had predicted that the Judeans would be exiles among the nations (so the Septuagint) for seventy years, and the Animal Apocalypse combines these varied images to produce the judgmental period of the rule by the seventy shepherds.[13] Consequently, Jeremiah's prophecy of seventy years is here put to a new symbolic use: not to represent all of time or the time of Jerusalem's desolation, but the age when God is subjecting his people to the rule of the nations who punish them. The seventy periods of rule by the shepherds are divided into four parts: the first twelve (89:72), the next twenty three (90:1); twenty three more (90:5); and the last twelve (90:17). These segments correspond roughly to the times when the Babylonians, Persians, Ptolemies, and Seleucids ruled the Jewish people.

The Book of Jubilees

Jubilees was written not long after the Animal Apocalypse—perhaps between 160 and 150 BCE. It retells the biblical story from creation until Israel arrives at Mt Sinai under Moses's leadership. Jubilees does not resort to animal imagery as the Animal Apocalypse does, nor does it avoid names of characters as the Apocalypse of Weeks does. Rather, it takes the form of a narrative through which it rewrites the Bible to address contemporary concerns and clarify problems in the text of Genesis—Exodus. Like the Apocalypse of Weeks, however, it does encapsulate its history within a symbolic framework of jubilees and weeks.

Jubilees' chronological system begins with the creation and counts the years from it until the (future) entry of Israel from the wilderness into Canaan, the promised land. The units with which the author operates are, of course, days, months, and years; but he groups them in his own way. Each seven-*year* period he calls a week, and he designates seven of these weeks (or forty nine years) a *jubilee*. The entire time span from creation to the entry into the land is fifty jubilees, that is, 2,450 years. As an example of the cumbersome way in which he expresses dates, we can use the year in which Adam died: it occurred in the nineteenth jubilee (that is, during the nineteenth unit of forty nine years), the seventh week in it (years forty three to forty nine), and the sixth year within that seventh week of years. These numbers add up to the year of the world 930, which, according to Gen. 5:5 was Adam's age at death.

It can be interesting and instructive to study the dates that Jubilees assigns to various events, but for us it is more important to examine the purpose that the elaborate chronology serves. By calling a major unit of his chronology a *jubilee*, the writer naturally invokes the biblical associations of that term. The Bible contains many laws for the jubilee, which it understands to be the fiftieth year, the year after completion of seven sabbatical cycles. According to Leviticus 25 (see also Deuteronomy 15 which confines its attention to the sabbatical year), during the jubilee year property reverted to its original owner and Israelite slaves were released. Jubilees transposes these terms onto a national level. In its chronology in the fiftieth jubilee period (the fiftieth unit of forty nine years) the Israelites regained the land that originally belonged to their ancestors, and they were released from slavery in Egypt. These events, which are separated by forty years, both fell within its fiftieth jubilee (see 50:1–5). Hence the author of Jubilees uses a biblically-tinged chronological unit and applies it to Israel's pre-Canaan history in order to make a telling point about the momentous events of the fiftieth jubilee period.

Other texts from Qumran that use weeks and/or jubilees

11QMelchizedek

A fragmentary scroll found in Qumran cave 11 centers about the mysterious person of Melchizedek, the priest-king of Salem who is mentioned in just two passages in the Hebrew Bible. Melchizedek was the one whom Abram met upon returning from defeating a coalition of kings in Gen. 14. Abram gave him a tithe of what he had and Melchizedek, who is termed a priest of God most high, blessed him by the name of his God. He also appears in Ps. 110:4 where he is associated with an order of an eternal

priesthood—the theme that the writer of the Book of Hebrews in the New Testament develops at some length.

The preserved parts of the cave 11 text begin with citations of Lev. 25:13 ("In this year of jubilee you shall return, every one of you, to your property") and Deut. 15:2 ("And this is the manner of the remission: every creditor shall remit the claim that is held against a neighbor, not exacting it of a neighbor who is a member of the community, because the Lord's remission has been proclaimed".) Once these texts are before the reader, the author turns to Isa. 61:1 and relates its words "to proclaim liberty to the captives" to the end of days. The eschatological liberty of the captives will place them in the lot of Melchizedek who is depicted as a heavenly judge.

The sequel reveals that the writer is working with a ten-jubilee chronology. He says that the liberation of the captives will occur in the first week of the tenth jubilee period:

> He will proclaim liberty for them, to free them from [the debt] of all their iniquities. And this will [happen] in the first week of the jubilee which follows the ni[ne] jubilees. And the day [of atonem]ent is the end of the tenth jubilee in which atonement will be made for all the sons of [God] and for the men of the lot of Melchizedek.
>
> (2:6–8)

The work is clearly most strongly concerned with what happens at this point, when Melchizedek leads the attack on the forces of evil so that the holy ones can be free from the rule of Belial. It is intriguing that at a later point in this column (the words before and after the expression are lost) we read: "to instruct them in all the ages of the worl[d]" (2:20). The phrase suggests that an understanding of the epochs of world history was given or will be given to a group who, judging by the preserved letters, are the mourners of Zion who are mentioned in Isa. 61:3. Nevertheless, the only specific numbers concern the nine jubilees, the first week in the tenth jubilee, and the Day of Atonement that ends the tenth jubilee.

The reference to a jubilee that ends on the Day of Atonement draws on the biblical statement that the year of jubilee was proclaimed on the Day of Atonement (the tenth of the seventh month) with a trumpet blast. The instructions about this event are found in Lev. 25:9–10, and the first words of this passage are cited in 11QMelch 2:25 If the Day of Atonement marked the beginning of a jubilee period, it would also stand at the end of one. This may be the thought in 2:7–8. While we do have this indication of the end of the tenth jubilee and the judgment and liberation which will take place then, the surviving pieces say little, if anything, about when the ten jubilees began. Milik draws attention in this regard to one of the small fragments (frg. 11) which mentions the wall of Jerusalem, the end of a jubilee, and apparently a time of peace. In his view, this means that the text associated the rebuilding of the temple and Jerusalem with the end of a jubilee period. Even if this is the case, we do not know what jubilee it was. As a result, we do not have enough information to decide whether the period was meant to cover all of world history as in the Apocalypse of Weeks or only the last part of it as in the Animal Apocalypse, the Damascus Document, and Daniel 9. The fragmentary condition of the manuscript is particularly frustrating because a few other references to time units, including (as we have seen) the end of a jubilee, are preserved in the small pieces.

4Q180–81

The evidence from the Melchizedek text is suggestive yet markedly incomplete, but we may agree that the work, in its pristine form, probably contained a more fully elaborated chronology for the ten jubilees.[14] However, J.T.Milik hypothesizes on the basis of the Melchizedek text and a few others from Qumran that 11QMelchizedek was part of a work entitled "Pesher on the Periods" that is also preserved in two fragmentary manuscripts labeled 4Q180 and 4Q181. We need not decide whether the three formed one work, but 4Q180 (called "The Ages of Creation") reports that it is about the "the ages [or, times] which God has made" and that before "creating them he determined their operations [according to the precise sequence of the ages,] one age after another. And this is engraved on the [heavenly] tablets [for the sons of men,] [for] /all/ the ages of their dominion." (frg. 1:1–4) The broken text apparently surveys biblical history in the remainder of frg. 1 and in frgs. 2–6. The second text, 4Q181, in frg. 2 line 3 refers to "Israel in the seventieth week" according to one understanding of the phrase. If this is its meaning, then it would be the equivalent of ten jubilee periods and would remind us of Daniel 9.

4Q384–90

In his survey of texts that utilize jubilees and weeks of years, Milik also mentions 4Q384–90 which the original editor, J.Strugnell, and Milik also regarded as copies of various parts of a work named Pseudo-Ezekiel, although more recently it has been suggested that three works are represented among these manuscripts. Milik writes that Strugnell found in 4Q384–89 "a long and rather confused series of Weeks and jubilees, but the fragmentary state of the manuscripts seems to him scarcely to permit any further elucidation."[15] The tattered remains of the copies support Strugnell's hesitation in that, while there are a few references to weeks and jubilees of years, there is insufficient evidence to understand the full system. 4Q390 offers more explicit information.

4Q385 36 i contains two relevant lines. In line 3 the completion of something is noted, while in line 4 there is a reference to "seventy [year]s." There is no context that would permit us to understand anything more about the number. It may be that 4Q387 1 9 also mentions seventy years; the number must be restored but it is quite likely since the line deals with time spent in the lands of the people's enemies, that is, in captivity. 4Q387 3 ii 1–6 is more helpful. The first lines describe rebellion against God that leads to his abandoning the people "until ten jubilees of years are complete" (lines 3–4). Nothing is said here about when these ten jubilees of years began but at least they are understood to be a time of punishment. In the sequel, their continued misconduct is noted as well as the fact that, when the evil generation has reached its end, the kingdom will be handed over to others who are from another nation.

4Q390 picks up some of these numbers and provides a little more context for them. The first fragment says that some people will be given into the power of the priests and in the same line it refers to seventy years. Milik reads the words here translated as "seventy years" as "two weeks of years" but in the process he is left with a redundant expression for the number "two" and, thus, a less likely reading. We learn that the priests, the sons of Aaron, will rule but not well. Their evil conduct is compared with what the Israelites did in the first years of their kingdom; unfortunately, we do not learn what those evils were or when the first days of their kingdom took place. It is possible that the writer has in

mind the entire period of the monarchy in Israel because in the next lines he mentions a group that did not participate in the sin of the priests: those who went up first from the land in which they were captives in order to build the temple (lines 5–6). "And when this generation passes, in the seventh jubilee of the devastation of the land, they will forget the law, the festival, the sabbath and the covenant" (lines 7–8). The following lines state that God will hide his face from them, deliver them to their enemies, and abandon them to the sword; although there will be survivors, angels of destruction will rule over them as they continue to sin. Here at least we have some context: after the evil of the monarchical period, the first returnees from exile who rebuilt the temple are praised. But later, in the seventh jubilee of the land's destruction, conditions deteriorate. Thus, the period of the seven jubilees begins with the exile. If we may combine these numbers with the ten-jubilees of punishment in 4Q387, that 490-year span would also have begun with the exile or destruction of the land. In such a scenario the pattern of Daniel 9 would once again be in evidence.

4Q390 2 1 also takes note of the key terms in this context. After mention of the temple in the first line, it speaks of the dominion of Belial which will happen to them. At that time the people will be handed over to the sword for one week of years. In the same line reference is made to "that jubilee" when they will violate all that God had commanded them through the prophets (lines 4–5). These events may be part of the ten jubilees of punishment in 4Q387 or they may be envisaged as coming before them (note the reference to the prophets).

Aramaic Levi (?)

Although Aramaic Levi was composed before the Qumran community formed, it is appropriate to consider it last because of uncertainty about whether it contained a jubilee—weeks chronology. Some of the numbers in 4Q384–90 are reminiscent of ones that the reader encounters in the Greek Testament of Levi 16–17. The Greek Testament of Levi is part of the Testaments of the 12 Patriarchs, a work that has survived in Greek and several daughter versions; it is often thought that it was based on a Semitic original, but that original has not been found. Aramaic Levi has some of the same contents as the Greek Testament of Levi and apparently served as a source for it. The fragmentary remains of Aramaic Levi preserve nothing corresponding with chapters 16–17 in the Greek text. This may mean that the Aramaic work was not the source for these chapters or only that, due to the accidents of survival and loss, the appropriate parts of the original text are no longer available.

So, while there is some question about how old the material in Testament of Levi 16–17 is, it may constitute indirect evidence for another work (Aramaic Levi) which uses jubilees and weeks of years for chronological purposes. In the chapters in question Levi, the ancestor of the priests, is pictured as speaking to his children from his deathbed:

> And now I have learnt in the book of Enoch that for seventy weeks you will go astray and profane the priesthood and pollute the sacrifices; and you will make void the law and set at naught the words of the prophets, in perverseness persecute righteous men and hate godly men, loathe the words of faithful men…
>
> (16:1–2)[16]

The first words of the next chapter connect directly with these verses and introduce a seven-jubilee history of the priesthood: "And because you have heard concerning the seventy weeks, hear also concerning the priesthood; for in each jubilee there will be a priesthood." (vv. 1–2a) The ensuing account of the priesthood can be summarized as follows:

First jubilee an ideal person is anointed to the priesthood.

Second jubilee an anointed one will be conceved in mourning although his priesthood will be glorified by all.

Third jubilee a priest will be overtaken by sorrow.

Fourth jubilee a priesthood associated with pain and injustice; all Israelites will hate one another.

Fifth jubilee the priesthood will be associated with darkness.

Sixth jubilee described in the same way as the fifth jubilee.

Seventh jubilee described in the same way as the fifth jubilee.

The writer then elaborates on this fateful jubilee:

> In the seventh (jubilee) there will be pollution, about which I cannot speak before the Lord and men; for they who do these things will know. Therefore they will be taken captive and become a prey, and the land and their property will be destroyed. And in the fifth week they will return to their desolate country and they will renew the house of the Lord. And in the seventh week the priests will come, who are idolators, contentious….
>
> (vv. 8–11)

The history of priestly decline and apostasy is traced over seventy weeks of years and over seven jubilees. The seventy weeks are described in such general terms that nothing can be learned from them about what specifically was to occur during the equivalent of ten jubilee periods. Moreover, the slightly more detailed accounts of the seven jubilee periods is difficult to interpret. It is usually not clear which persons or events are under consideration. In fact, not enough is said about the first jubilee to determine whether the count begins with Levi or Aaron or someone else. The list seems to end with the seventh jubilee because chapter 18 discusses the eschatological priest. The only certain feature of the jubilee list is that in the paragraph concerning the seventh jubilee the writer alludes to two recognizable historical events: destruction/exile, and return/ building the temple in the fifth week. The seventh and last week of the jubilee period is marked more vaguely by the coming of sinful, immoral priests. Their punishment at the Lord's hand and the end of the priesthood are mentioned in 18:1.

Conclusions

The varied instances of jubilee/weeks chronologies leave us with a less than unified picture, but its main contours may be sketched fairly easily. First, taking their cues from the biblical legislation regarding sabbatical years and jubilees and from Jeremiah's seventy-year prophecy, a series of writers used multiples of the related numbers seven and forty nine to fashion chronologies for different periods:

1 All of history and the stages of the final judgment (the Apocalypse of Weeks; possibly

the Melchizedek text).

2 Not all of history but an extremely long segment of it: Testament of Levi 16–17; cf. 1 Enoch 10:12 where seventy generations stretch between the first judgment (the flood) and the second (the final assize); Jubilees includes a long segment of the past—creation to entry into the land—in its jubilee-weeks chronology.

3 The most popular option seems to have been to employ such chronologies for the exilic and certainly for the post-exilic ages until and beyond the authors' times (Dan. 9, perhaps CD 1 and 20, the Animal Apocalypse, and probably 4Q384–90; the same may be true of the seventy weeks of 4Q181).

Second, all these systems are packaged as predictions and serve to demonstrate that the future is known to God who has arranged it into periods and has revealed such information to certain chosen individuals so that they can understand the course of history and the divine plan that drives it. Some of the calendar texts from Qumran suggest that scholars had worked out the history of the world according to the jubilee-weeks pattern, beginning with creation; but the texts surveyed here show a special preoccupation with the latter parts of Israel's history and with the end to which God is providentially guiding it.

8
CONCLUSIONS

After studying the calendrical and chronological information from the Qumran texts and the history of scholarship on them, several basic conclusions emerge. These are discussed first, and the second part of the chapter is a tentative sketch of what part the calendar may have played in the origins of the Qumran covenanters as a group separated from the larger Jewish community in Palestine.

SUMMARY STATEMENTS

The subject of calendars appears to have been a very important one at Qumran. One type of evidence for this conclusion is the number of copies of works that are calendrical in nature. The official list of the cave 4 texts from Qumran assigns the numbers from 4Q317 to 4Q330 to calendrical documents—a total of fourteen items. As 4Q321 is divided into two texts and 4Q324 into four, the total number increases to eighteen and, if 4Q561 is added, to nineteen. These are merely the texts identified as calendrical; many others, as we have seen, have calendrical sections and themes. Such totals suggest that topics concerned with calendars were not a peripheral concern at Qumran. We do not know how these documents were used or how frequently the members of the Qumran group consulted them, but at least the covenanters had access to a sizeable corpus of texts that gave calendrical information and applied it to different purposes. Moreover, the people of Qumran engaged in polemics with other Jews who advocated different calendrical systems. Calendars were not significant in and of themselves, however; they were simply written records of the way in which God had ordered his creation. It was incumbent on the members of the Qumran covenant to observe the sacred festivals at the revealed times. To do otherwise entailed violating the harmony of the universe and mixing the sacred with the profane. Those who opposed the calendrical inferences of the group were charged with disobeying God and violating the covenant.

Another result emerging from a study of the full range of evidence is that more than one calendar is attested at Qumran. The 364-day solar system is mentioned explicitly in the first Psalms scroll from cave 11 and in 4QCommentary on Genesis A, and it is presupposed throughout the calendrical works and in other texts such as the Songs of the Sabbath Sacrifice. Appearance of the 364-day solar year in the texts from the caves proves that the Qumran community belonged in the same calendrical tradition as the one embodied in 1 Enoch and Jubilees. But the cave 4 calendrical documents just as clearly set forth a schematic, 354-day lunar arrangement that was brought into alignment with the solar calendar by regular intercalations. There is no clear indication in the texts that the lunar system was considered inferior to the solar year, as was the case in Jubilees. In this respect the Qumran calendars are more in line with the teachings in 1 Enoch than

with that which Jubilees has to say about the subject. Yet, despite this important disagreement between the scrolls and Jubilees, the caves have yielded many copies of the latter, and the author of the Damascus Document appears to have considered it an authority. While the Qumran texts are more akin to 1 Enoch in this respect, they do not agree with it fully. It appears to be the case that, while the Astronomical Book locates the new moon at the beginning of the month, for the Qumran calendars it is the full moon that marks the inception of a new month.

A text such as 4Q319 (4QOtot) makes it quite likely that a form of intercalation was known and perhaps practiced at Qumran. The system would bring the schematic solar calendar of 364 days into line with the true solar year by augmenting it in units of seven so that this all-important chronological fact would not have to be set aside in order to reconcile the two systems. If the Qumran community did have a method for intercalating their solar calendar at regular intervals, it becomes more likely that the calendar was put into practice and explains why it could be embraced over a long period of time. In light of this result, it is puzzling that the Enochic calendars show no signs of intercalation (the closest they come to it is recording by how many days solar and lunar calendars differ over periods of one, three, etc. years); Jubilees, too, which places heavy emphasis on the precision of the number 364, has no place for supplementary weeks and months.

The solar calendar is the one according to which the religious holidays are dated, and dating sacred festivals is one of the central uses to which the calendar was applied. Not only is the expanded list of holidays coordinated with the 364-day system; the priestly courses are also an integral part of the calendar documents. By incorporating the dates of sabbaths and festivals and the periods of service for the priestly courses into their system for measuring time, the cultic and theological concerns of the authors come to expression. The calendars are, with few exceptions, oriented towards worship. In the case of the priestly divisions, it seems as if the covenanters worked with this institution because they anticipated a return to the Jerusalem sanctuary and to service in it according to what they believed was the divine will. The group seemed to have been confident that their exile from the temple was only temporary. The calendars, with their unalterable rhythms, also expressed the theological or philosophical conviction that the courses of the luminaries and the cycles of festivals and priestly duties operated in a cosmic harmony imposed upon them by the creator God himself. The liturgical and theological emphases of the Qumran calendars betray a heavy influence from priests and priestly traditions.

Some of the calendrical documents show that the writers extended the scope of their works to cover remarkably long stretches of time. We have seen that the mishmarot system was assumed to have been in operation from the fourth day of the creation week to the present and that the harmony of sun and moon also dated from the fourth day when God had created them. Moreover, while a few texts show interest in establishing what could be called literal chronologies, a larger number of them are concerned with encasing all history or a part of it, especially the exilic and post-exilic periods, within chronologies based on weeks of years and jubilees of years. The often monotonous and repetitious texts show the energy that went into calculating the times at Qumran. It is probable that such energy was expended toward an end that the authors considered highly significant, not endlessly tedious.

Calendars could be put to different uses. At Qumran, dating festivals was obviously important, but some texts show that calendars were used to record important events and

the names of the characters who participated in them. The astrological texts also demonstrate that divination was known at Qumran. God had placed in the phenomena of the sky a code from which one could decipher what the character of a person would be and what events were bound to occur.

A HYPOTHETICAL SKETCH OF THE ROLE OF THE CALENDAR IN QUMRAN ORIGINS

As Talmon argued, calendar disputes have played a leading role in a number of schisms in Jewish history. We have seen that the calendar is a highly significant topic in the Qumran texts and that the authors at times engaged in heated debates with their opponents in connection with such topics. Did the calendar have a part in the events that led to the separation of the Qumran covenanters from their Jewish contemporaries?

At the outset it should be said that there is insufficient evidence to allow anyone to write a definitive account of the origins and history of the group associated with the Dead Sea scrolls. External sources rarely mention the community, while their texts are not historical in nature and usually do not refer to historical events and characters. Nevertheless, there is a series of hints in the sources that suggest a role for the calendar in the disputes that led to the final rupture. We may never know what the precise contours of the ancient debates were but some general proposals can be offered.

Several lines of evidence favor the hypothesis that the Qumran community came into existence in the second century BCE. The standard reconstruction of the archeological history of Khirbet Qumran—that of R. de Vaux, the excavator (de Vaux 1973:3–5)—is that the first buildings were constructed at the site in the reign of John Hyrcanus (134–104 BCE) or perhaps shortly before he began to rule. The evidence is being re-examined today and de Vaux's theories are under attack from various quarters, but to date no widely accepted hypothesis has taken its place. If de Vaux is roughly correct, we should look for the origins of the group that eventually moved to Qumran at some point before the first buildings (phase Ia) of the so-called sectarian period were set up. This entails that the group may have originated at some time in the middle of the second century or even before.

It would be very helpful to know which calendar was employed in the second temple. It will be recalled that Jaubert believed the 364-day solar year was used for official cultic purposes in the first part of the period, but she also thought that lunar modifications were introduced into the system at a later time. Ben Sira, with his statements about the moon and festal dates, is supposed to reflect this modified state of affairs. But none of her reconstruction is conclusive. There is no firm evidence that the 364-day calendar ever dated the ancient biblical festivals celebrated in Jerusalem, just as there is no proof that a lunar or luni-solar calendar served this function. The Elephantine garrison used a luni-solar calendar but did so for official documents because it was the practice of the wider world, not because it had inherited the calendar from cultic practice in Jerusalem.

The first hint that the cultic calendar of the Jerusalem temple became a point of dispute is found in Dan. 7:25. There it is said that the little horn on the fourth beast of Daniel's vision "shall speak words against the Most High, shall wear out the holy ones of the Most High, and shall attempt to change the sacred seasons [literally, the times] and

the law." The character symbolized as the little horn is recognized to be Antiochus IV (175–164 BCE) who banned the practice of Judaism in 167 BCE. His efforts at changing the times seem to involve calendrical issues; in fact, the vague reference in Dan. 7:25 may point to an attempt by the Seleucid government to force a new calendar on the Jewish people (Collins 1993:322).

Support for this hypothesis comes from the books of Maccabees. 2 Macc. 6:7, which describes some of Antiochus' policies against the Jewish religion, reports that: "On the monthly celebration of the king's birthday, the Jews were taken, under bitter constraint, to partake of the sacrifices; and when a festival of Dionysus was celebrated, they were compelled to wear wreathes of ivy and to walk in the procession in honor of Dionysus." Of particular interest here is the mention of the monthly celebration of the royal birthday. This practice which is more widely attested in the Hellenistic royal cults took place on a specified date each month—the date on which the king had been born—and presumably served a practical function by encouraging popular loyalty to the divine king. But if the king's birthday was to be observed on the correct date, one had to follow the proper calendar. In the case of the Seleucid empire, that calendar was a luni-solar arrangement. It appears from this verse that the Jews were compelled to celebrate a holiday that was dated according to the Seleucid calendar. The cultic character of the event emerges from the reference to partaking of the sacrifices that were offered on the occasion. 1 Macc. 1:45 confirms that the royal policy involved profaning sabbaths and festivals, that is, the Jews were apparently not permitted to celebrate their own holidays but were forced to observe Seleucid ones. Or, as 2 Macc. 6:6 says: "People could neither keep the sabbath, nor observe the festivals of their ancestors".

That the monthly celebration of the king's birthday was commemorated in the temple follows from 1 Macc. 1:59 which is speaking, it seems, of the same event as the one mentioned in 2 Macc. 6:7. "On the twenty fifth day of the month they offered sacrifice on the altar that was on top of the altar of burnt offering." The twenty fifth appears to have been the date of the royal birthday, and on it sacrifices were presented on the altar in the temple in Jerusalem. That is, the Seleucid calendar now regulated festivals and sacrifices in the sanctuary of the Lord (VanderKam 1981:52–74).

The temple was taken by Judas Maccabeus and his troops in 164 BCE when they cleansed it and rededicated it to the service of the God of Israel. The decrees against the Jewish religion were not officially revoked, however, until 162 BCE. What the calendrical situation in the temple may have been after 164 or 162 is never stated in the sources. But soon thereafter a peculiar situation developed. Our sources, which document the presence of a Jewish high priest from the beginning of the second-temple period (*c.* 516 BCE) and continue without interruption, mention no such official for the years 159, when the high priest Alcimus died, until 152, when Jonathan the Maccabee was appointed to the office. What happened during those seven years? The honest answer is that we do not know, but there is some intriguing evidence that someone may actually have been high priest at the time although he remains anonymous. The evidence comes from one of the letters preserved in 1 Maccabees 10. In it Demetrius, one of the pretenders to the Seleucid throne, refers twice to the high priest at a time when there was not supposed to be one (10:32, 38). If these allusions reflect a time when, judging from the silence of the sources, there was no reigning high priest, it would suggest that

something strange was happening. Was there actually a high priest or an acting high priest whose name was later dropped from the historical record?

This is highly speculative, but H.Stegemann (1965/1971:212–14) and J.Murphy-O'Connor (1976:400–20) have maintained that the man who was high priest, or at least the highest-ranking priest from 159–152 BCE, was none other than the Teacher of Righteousness who is identified as a priest in several Qumran texts. Any record of his rule has been dropped from the historical sources. All of this goes far beyond the evidence in hand (why would the Teacher's name be expunged from the record when those of the so-called Hellenizing high priests have been retained?), but it may nevertheless be considered an intriguing possibility. Jonathan, the first Hasmonean high priest, was not from the Oniad family that had produced the high priests until 175 BCE, although he was a priest. A series of Seleucid appointees to the post had held the office from 175 (Jason, Menelaus, and Alcimus), but Jonathan was appointed in 152 BCE because of the military support he could offer to whoever gave him the office. "Whether he was inclined to reject the Seleucid calendar is not clear, but at least he owed his position to royal nomination and may have preferred to keep the Seleucid calendar if in fact it was still in use in the temple, or may have reintroduced it if it was not practiced there. Jonathan remains the best candidate for being the Wicked Priest who was the lethal opponent of the Teacher of Righteousness. It is widely accepted that "Wicked Priest" (Hebrew *ha-kohen ha-rasha*') is a play on one expression for "high priest" *(ha-kohen ha-rosh).* We know from Pesher Habakkuk that the Wicked Priest and the Teacher followed different festal calendars, since they did not observe the Day of Atonement at the same time.

Several of the texts found at Qumran are insistent that all Israel had gone astray with respect to the festivals, God's sacred times. There is reason to believe that a calendar dispute lies behind such sentiments, and the Qumran covenanters were convinced that their calendar had ancient, scriptural support. 4QMMT, which may preserve a record of the points at dispute between the Qumran community and their Jewish opponents, begins, as far as we can tell, with a statement about the 364-day calendar (the number must be partially restored), thus suggesting that calendar was one of the issues that separated the two sides. The Teacher would have been an advocate of the traditional 364-day calendar, one that does indeed have a more ancient pedigree as the Astronomical Book shows. It may be that a conservative priest like the Teacher, whose powerful claims about himself and his position as they come to expression in the Hodayot make one think that he had once held high rank although he did so now only in his community, tried to (re)introduce the 364-day solar calendar into the temple cult after the immediate Seleucid threat had been removed. However, any position he would have advocated would have become a moot point when Jonathan and his army arrived to take over the temple and high priesthood. This may have been the occasion that caused the Teacher to lead his followers into exile where they could practice their religion using the calendar that God had revealed and that they alone understood.

While much of this reconstruction must remain highly speculative, we are at least allowed to say that in the disputes which eventually led to the exile of the Qumran community the correct, divinely revealed calendar played a noteworthy part.

NOTES

1 THE HEBREW BIBLE

1 All translations of biblical passages are taken from the New Revised Standard Version.

2 See C.Westermann, *Genesis 1–11: A Commentary*, Minneapolis, Augsburg, 1984, p. 433.

3 R. de Vaux gives a listing of the relevant passages in *Ancient Israel*, pp. 180–3. He thinks that at an earlier time the morning served as the beginning of the day, but that between the end of the monarchy and the time of Nehemiah the reckoning changed so that the evening was considered the time when it started.

2 SOURCES LATER THAN THE HEBREW BIBLE

1 Ibid. 281. See also lines 5–6.

2 He was able to infer that this section dealt with the eighth night of a month from the fact that the ninth night is mentioned just below in line 4.

3 Translations of the Astronomical Book are from O.Neugebauer in *The Book of Enoch or 1 Enoch*, by Matthew Black, in consultation with James C.VanderKam, with an Appendix on the "Astronomical" Chapters (72–82) by Otto Neugebauer.

4 Although Neugebauer's rendering of the Astronomical Book has been used up to this point, the translation of 74:10–11 comes from M. Knibb, *The Ethiopic Book of Enoch*, vol. 2, since Neugebauer failed to furnish a full translation of 74:10–17 because he considered the section "confused nonsense which some scribes produced from some trivial arithmetical relations" (ibid. 399) which he considered an addition to the original text.

5 All the textual evidence for Jubilees that was available at the time was published in VanderKam, *The Book of Jubilees*. All the remaining copies of the book from cave 4 have now appeared in VanderKam and Milik, "Jubilees," in *Qumran Cave 4 VIII: Parabiblical Texts Part I*, pp. 1–140. The oldest copy of the book, 4Q216, dates from *c.* 125–100 BCE.

6 Translations of Jubilees are taken from VanderKam, *The Book of Jubilees*, vol. 2.

7 Many of the pertinent passages are collected in Charles, *The Book of Jubilees or the Little Genesis*, pp. 106–7 n.

8 Charles, *The Book of Jubilees or the Little Genesis*, lxviii. He was referring to Epstein's essay "Le Livre des Jubilés, Philon et le Midrasch Tadsché," *REJ*, 1891, vol. 21, pp. 10–13.

9 Ibid. 55. Charles did add, however, that the festivals in Jub. 6:23–9 are not fixed according to this alleged ecclesiastical calendar.

10 That is, as in 1 Enoch, the author refers to a lunar year of 354 days.

3 RABBINIC LITERATURE

1 The quotation is taken from J.A.Fitzmyer and D.J.Harrington, *A Manual of Palestinian Aramaic Texts (Second Century B.C.—Second Century A.D.)* p. 185. They offer a short discussion of the dating problem and an ample bibliography on pp. 248–50.

2 All translations from the Mishnah are from H.Danby, *The Mishnah*.

3 In his note to this passage Danby writes that the confusion came in the psalm that was sung at the daily whole offering since on the first of the month an additional offering had to be made. "Therefore the offering was delayed as long as possible for the arrival of witnesses to know whether or not Additional Offerings should be brought and whether the Levites should sing the psalm for an ordinary day or for a festival day. This time the delay was so long that there was not enough time for the prescribed psalm." (p. 193, n. 12)

4 See E.J.Bickerman, *Chronology of the Ancient World*, p. 16. It actually varies between 29.26 and 29.80 days (see p. 18).

5 The translation comes from J.E.L.Oulton, *Eusebius: The Ecclesiastical History.*

6 For the talmudic passages, the statement of Anatolius, and other details about the Jewish calendars, see E.Schürer, *The History of the Jewish People in the Age of Jesus Christ (175 B.C.-A.D. 135),* pp. 587–601.

4 THE FIRST CALENDRICAL HINTS

1 Translations of the Qumran scrolls come from F.García Martínez, *The Dead Sea Scrolls Translated,* unless otherwise indicated.

2 The translation is from G.Vermes, *The Dead Sea Scrolls in English.* As the tenth copy of the text from cave 4 shows (4QS^{j}), the poem may once have existed independently.

3 The translation is by H. St. J.Thackeray, *Josephus II The Jewish War Books I-III.*

4 A statement in the first copy of the work from Qumran cave 4 also seems to have a calendrical meaning: "for they can neither [come b]efo[r]e or after their appointed times" (4Q266 2 i 2; see J.Baumgarten, *Qumran Cave 4.XIII The Damascus Document (4Q266–273),* pp. 34–5.

5 See U.Glessmer, *Die ideale Kultordnung: 24 Priesterordnungen in den Chronikbüchern, den kalendarischen Qumrantexten und in synagogalen Inschriften,* pp. 110–17. He argues that the twenty six chiefs of the divisions are lay leaders. See also S.Talmon and I. Knohl, "A Calendrical Scroll from a Qumran Cave: *Mišmarot* B^{a}, 4Q321" in D.P.Wright, D.N.Freedman, and A.Hurvitz, eds., *Pomegranates and Golden Bells: Studies in Biblical, Jewish, and Near Eastern Ritual, Law, and Literature in Honor of Jacob Milgrom,* p. 296, n. 44; they also oppose the idea that the twenty six refer to the priestly courses.

5 A HISTORY OF SCHOLARSHIP ON THE QUMRAN CALENDARS

1 Barthélemy (1952) "Notes en marge de publication récentes sur les manuscrits de Qumran," *RB,* pp. 187–218. He discusses calendrical matters on pp. 199–203.

2 Jaubert (1953) "Le calendrier des Jubilés et de la secte de Qumrân: Ses origines bibliques," *VT,* pp. 250–64; "La date de la dernière cène," *RHR,* pp. 140–73; and (1957) "Le calendrier des Jubilés et les jours liturgiques de la semaine," *VT,* pp. 35–61. The book's full title is *La date de la cène: calendrier biblique et liturgie chrétienne;* it was translated into English in 1965 as *The Date of the Last Supper.* For a response to aspects of her theory, see VanderKam, "The Origin, Character, and Early History of the 364-Day Solar Calendar: A Reassessment of Jaubert's Hypotheses," pp. 390–411.

3 They were so named because the priestly courses or mishmarot *(mšmrwt)* of 1 Chr. 24:7–18 are a constitutive factor in the calendars. These texts are described more fully below.

4 His report was presented to the Strasbourg Congress in 1956 and published (1957) as "Le travail d'édition des manuscrits du désert de Juda" in *Volume du Congrès Strasbourg 1956,* pp. 17–26.

5 The French edition was published by Les Éditions du Cerf in Paris in 1957. The English edition (expanded and revised from the French original) was by SCM Press Ltd of London and was translated by John Strugnell.

6 Talmon, "The Calendar Reckoning of the Sect from the Judaean Desert" in *Aspects of the Dead Sea Scrolls,* pp. 162–99.

7 The offering in question is the *tamid* offering, the one that according to Exod. 29:38–42; Num. 28:3–8 was to be presented in the morning and evening of every day.

8 The translation is from E.Qimron and J.Strugnell, *Qumran Cave 4. V: Miq at Ma'aśe Ha-Torah,* p. 45. They read [sixty four] but, as their transcription on p. 44 shows, the first letter of "sixty" is visible. Hence in the translation above the first bracket has been moved to reflect this fact.

9 The Hebrew edition appeared in 1977, with an English translation coming six years later: *The Temple Scroll*, 3 vols., Jerusalem, IES, 1983. There are two copies of the work from cave 11: the large copy is 11Q19 (=11QT[a]) and the fragmentary copy is 11Q20 (11QT[b]). 4Q365a is also regarded by some as coming from a copy of the work.

10 See Baillet (1982) "503. Prières Quotidiennes" in *Qumrân Grotte 4 III (4Q482–4Q520)*, pp. 105–36. See also J.Baumgarten (1986) "4Q503 (Daily Prayers)," *RevQ*, pp. 404–6.

6 THE CALENDRICAL TEXTS

1 M.Albani, (1992) "Die lunaren Zyklen im 364-Tage-Festkalender von 4QMischmerot/4QS[e]," *Mitteilungen und Beiträge*, p. 23 ("Der Grundgedanke der in 4QMischmerot repräsentierten Kalenderordnung ist die Vorstellung einer himmlisch-irdischen Entsprechung, wonach die Umläufe der Gestirne und die Zyklen der Priesterdienste einen gemeinsamen Ursprung haben. Diese Universalisierung des Tempelkultes bis zum weitesten Horizont der Weltschöpfung kann natürlich nur den theologischen Interessen priesterlicher Kreise entsprungen sein".)

2 This designation means that it is the fifth calendrical document (E) and the second copy of it. Since there is a certain similarity between many of these calendrical texts, they have the same name but are distinguished by capital letters after the name.

3 This point has been made by several writers. See García Martínez, (1993–4) "Dos notas sobre 4QMMT," *RevQ*, pp. 293–97; L.Schiffman, "The Place of 4QMMT in the Corpus of Qumran Manuscripts" in J.Kampen and M.J.Bernstein (1966), eds., *Reading 4QMMT: New Perspectives on Qumran Law and History*, pp. 81–98, especially pp. 82–6; and VanderKam, "The Calendar, 4Q327, and 4Q394" in *Legal Texts and Legal Issues: Second Meeting of the IOQS, Cambridge 1995*, pp. 179–94. It should be added that the first preserved fragment of 4Q394 does contain the calendrical statement that was quoted above as an example of a text that nearly reads the number 364; that a calendar statement appeared at the beginning of MMT is quite a different matter than the issue whether 4Q327 preceded it.

4 It is not clear why García Martínez places the word "[fe]stival" here; it is not in the Hebrew text.

5 Milik published a small part of the text (1 ii 2–14) in *The Books of Enoch*, pp. 68–9.

6 Although the text does indeed say "sabbath" at this point, the meaning is "the week of." Hence the text is talking about the third day in the week that the priestly course of Me'ozayah was on duty in the temple. The spellings of the names for the priestly divisions in García Martínez's translation differ somewhat from those given in the list above, but they are usually easily recognizable.

7 Each fifty two-week year would have a surplus of four weeks beyond the forty eight weeks that the twenty four priestly courses would serve in two rotations. Six years would be required to return the rotation to the same dates for each group as in its first year; that is, in six years the extra four weeks in each year would total twenty four, the number of the courses.

8 There is a mistake in García Martínez's translation here. The Hebrew text has *bšbt [bny g]mwl* which means: in the sabbath [=week] of [the sons of Ga]mul, but for some reason he renders with Shebat [son of Ga]mul (here and in the next passage quoted). For the text of this document, see B.Z.Wacholder and M.G.Abegg, *A Preliminary Edition of the Unpublished Dead Sea Scrolls: The Hebrew and Aramaic Texts from Cave Four*, pp. 60–7. This fascicle remains the most comprehensive presentation of the Hebrew texts of the calendrical documents from Qumran cave 4.

9 As Albani has noted, the Qumran mishmarot calendars differ from 1 Enoch 72–82 on this point. In 1 Enoch the new moon, not the full moon, marks the beginning of the month. "At any rate, the data in 4QMishmerot basically agree with the Astronomical Book. One has only to exchange the full moon with the new moon to arrive at the system of the Astronomical Book" ("Allerdings stimmen die Angaben in 4QMischmerot grundsätzlich mit dem AB überein. Man

braucht nur die Vollmonde mit dem Neumonden zu vertauschen, um das System des AB zu erhalten"] ("Die lunaren Zyklen," 25)). Milik had reported this curious feature of the Qumran lunar calendar in *Ten Years*, p. 152, n. 5.

10 Milik had announced, cited, and briefly explained this part of the text in "Le travail," p. 25. The Hebrew text is in Wacholder-Abegg, *A Preliminary Edition,* 1.60–7.

11 See Glessmer, *Die ideale Kultordnung,* pp. 158–61; García Martínez, "Calendarios en Qumran (II)," *Estudios Biblicos,* p. 524. This seems to be indicated at 1 iii 13–14 where *hhdš* appears twice, apparently to identify the thirty seventh lunar unit.

12 The term refers to the sabbatical or seventh years.

13 Milik had also annouced the existence of this text in "Le travail," p. 25. For a history of the rather confusing treatment of the text, especially the question whether it is part of 4Q259, see Glessmer, "The Otot-Texts (4Q319) and the Problem of Intercalations in the Context of the 364-Day Calendar" in H.-J.Fabry, A.Lange, and H.Lichtenberger (1996), eds., *Qumranstudien: Voträge und Beiträge der Teilnehmer des Qumranseminars auf dem internationalen Treffen der Society of Biblical Literature, Münster, 25–26. Juli 1993,* pp. 125–32. It should be noted that in García Martínez's translation of the scrolls 4Q319 is placed with 4Q259, not with the other calendrical texts.

14 Milik (1956), "Le travail d'édition des fragments manuscrits de Qumran," *RB,* pp. 60–2; Cross, "The Paleographical Dates of the Manuscripts" in *The Dead Sea Scrolls: Hebrew, Aramaic, and Greek Texts with English Translations,* vol. 1: *Rule of the Community and Related Documents,* p. 57.

15 García Martínez, "Calendarios en Qumran (I)," 339–41.

16 In this system a jubilee is a period of forty nine years.

17 Glessmer provides convenient charts for the data ("The Otot-Texts," pp. 150–4) which offer a correction to the system set out in Milik, *The Books of Enoch,* p. 65.

18 The total 294 equals the number of years, expressed in exactly the same way as six jubilees of years, that Jub. 4:21 attributes to the time that Enoch spent with the angels (the period for his walk with "the elohim" [*h'lhym;* see Gen. 5:21–4]). Cf. Albani, "Die lunaren Zyklen," p. 34.

19 Milik (*The Books of Enoch,* p. 61) saw a reference to such units in Jub. 4:18 (the week of the jubilees, that is, seven jubilees).

20 It is not clear what is meant by the last clause. In the two places where the clause survives, the wording is 2 *mzh bšm h 'twt* (see 4:17; 6:5–6, 13; 7:8, 17–18) with either Gamul or Shekaniah after the number (so in 6:6, 13.) But on Glessmer's reconstruction the numbers do not work out, nor do they do so according to Milik's chart (*The Books of Enoch,* p. 65) if the meaning is, for instance, that Gamul was the sign for two release years in that jubilee (his course would have served in just one).

21 *The Books of Enoch,* pp. 62–5. Milik uses the older siglum 4Q260B for this manuscript.

22 On the intercalary question, see VanderKam, "Calendrical Texts and the Origins of the Dead Sea Scroll Community" in *Methods of Investigation of the Dead Sea Scrolls and the Khirbet Qumran Site,* pp. 377–9.

23 Words between { } are the editors' explanatory additions. The word "year" in the expression "The] se[cond] {year}" in line 6, however, they have actually reconstructed in the text and it should not, therefore, have been surrounded by { }.

24 That is, passover.

25 See Wise, "Observations on New Calendrical Texts from Qumran" in his *Thunder in Gemini,* pp. 222–39; "Second Thoughts on פוך and the Qumran Synchronistic Calendars" in J.C.Reeves and J.Kampen, pp. 98–120.

26 For evidence that favors this conclusion, see VanderKam, "Calendrical Texts", pp. 380–3. Milik had deduced the same from his early study of the mishmarot texts; see his *Ten Years,* p.

152, n. 5.

27 The text does not support at all the opinion of Talmon and Knohl who argue that 4Q321 reveals a negative view of the moon and thus of lunar reckonings ("A Calendrical Scroll," pp. 298–301).

28 The most complete treatment of these poorly preserved texts is in García Martínez, "Calendarios en Qumran (II)". There he provides introductions, translations, and bibliographies for nearly all of the texts listed here.

29 So little of the text is preserved that García Martínez did not offer a translation in his otherwise complete rendering of the Calendrical works in "Calendarios en Qumran (II)" (see p. 546).

30 The official list of Judean Desert texts also includes 4Q335–6 which are labeled "astronomical frags.?"; 4Q337 called "frag. of calendar"; and 6Q17 "papCalendrical Doc." (published in M.Baillet (1962), *Les 'petites grottes' de Qumran,* DJD III, Oxford, Clarendon.

31 In their presentation of the text, R.Eisenman and M.Wise apparently assumed that the calendar in 4Q318 was one of 364 days because they reconstruct a mondi with thirty one days (see their frg. 1, line 8; *The Dead Sea Scrolls Uncovered,* pp. 258–63).

32 Albani, "Der Zodiakos," pp. 27–35. He has developed his views about the origins of the Enochic astronomy at greater length in his *Astronomie und Schöpfungsglaube: Untersuchungen zum astronomischen Henochbuch,* especially pp. 155–272.

7 MEASURING AND SYMBOLIZING LONGER UNITS OF TIME

1 See J.M.Miller and J.H.Hayes, *A History of Ancient Israel and Judah,* pp. 58–9.

2 For a convenient discussion of the subject, see M.Cogan, "Chronology: Hebrew Bible".

3 J.Hughes. *Secrets of the Times: Myth and History in Biblical Chronology,* p. 234. The extra two years indicated after the/for the events after the flood take into account the two years between the flood and the birth of Arpachshad.

4 Ibid.

5 Ibid. The postdating system means that the first year of a person or entity is counted, not from beginning or birth, but from the first new year after it. Thus, in postdating, the 4,000 year of the chronology would be 164 BCE. See ibid., 20–1. Hughes claims that there were 323 years from the destruction of the temple to the year 164, but he is obviously 100 years off (see p. 234).

6 See ibid., 235–7 where he addresses possible objections to this conclusion.

7 See W.Holladay, *Jeremiah 1: A Commentary on the Book of the Prophet Jeremiah Chapters 1–25,* pp. 663, 665.

8 For the passage, see J.Collins, *Daniel,* pp. 352–8.

9 M.Wise in M.Wise, M.Abegg, and E.Cook, *The Dead Sea Scroll: A New Translation,* pp. 441–42.

10 Wise has examined the text in far more detail in "To Know the Times and Seasons: A Study of the Aramaic Chronograph 4Q559," *Journal for the Study of the Pseudepigrapha,* pp. 3–51.

11 (1995) "The Two Wicked Priests in the Qumran Commentary on Habakkuk," Appendix C of *The Qumran Chronicle,* vol. 5, p. 14.

12 See the discussion of the dating proposals in VanderKam, *Enoch and the Growth of an Apocalyptic Tradition,* pp. 161–3.

13 Ibid. 164–7.

14 See, for example, P.Kobelski, *Melchizedek and Melchireša* CBQMS 10, pp. 49–50.

15 Milik, *The Books of Enoch*, p. 254. Milik had earlier studied such works in his essay "Milkî-edeq et Milkî-reša " dans les anciens écrits juifs et chrétiens," *Journal of Jewish Studies*, pp. 95–144.

16 Translations of the Testament of Levi are from H.W.Hollander and M.de Jonge, *The Testaments of the Twelve Patriarchs: A Commentary.*

BIBLIOGRAPHY

Albani, M. (1992) "Die lunaren Zyklen im 364-Tage-Festkalender von 4QMischmerot/4QS^{e}", *Mitteilungen und Beiträge* 4: 3–47.

——(1993) "Der Zodiakos in 4Q318 und die Henoch-Astronomie", *Mitteillungen und Beiträge* 7: 3–42.

——(1994) *Astronomie und Schöpfungsglaube: Untersuchungen zum astronomischen Henochbuch*, Wissenschaftliche Monographien zum Alten und Neuen Testament 68, Neukirchen: Neukirchener Verlag.

——and Glessmer, U. (1997) "Un instrument de mesures astronomiques à Qumran", *Revue Biblique* 104: 88–115.

Albright, W.F. (1958) "The Gezer Calendar", in J.B.Pritchard (ed.) *The Ancient Near East: An Anthology of Texts and Pictures*, Princeton: Princeton University Press.

Baillet, M. "503. Prières Quotidiennes" in M.Baillet (ed.) *Qumrân Grotte 4 III (4Q482–4Q520)*, DJD 7, Oxford: Clarendon.

Barthélemy, D. (1952) "Notes en marge de publication récentes sur les manuscrits de Qumran", *Revue Biblique* 59: 187–218.

Baumgarten, J. (1986) "4Q503 (Daily Prayers) and the Lunar Calendar", *Revue de Qumran* 12: 399–407.

——(1996) *Qumran Cave 4.XIII The Damascus Document (4Q266–273)*, DJD 18, Oxford: Clarendon.

Bickerman, E.J. (1980) *Chronology of the Ancient World*, Second edition, Ithaca, NY: Cornell University Press.

Charles, R.H. (1902) *The Book of Jubilees or the Little Genesis*, London: Black.

Clines, D.J.A. (1974) "The Evidence for an Autumnal New Year in PreExilic Israel Reconsidered", *Journal of Biblical Literature* 93: 22–40.

Cogan, M. (1993) "Chronology: Hebrew Bible", *Anchor Bible Dictionary*, vol. 1. 1002–1011.

Collins, J. (1993) *Daniel*, Hermeneia, Minneapolis: Fortress Press.

Cross, F.M. (1974) "The Papyri and Their Historical Implications", in P.W.Lapp and N.L.Lapp (eds) *Discoveries in the Wâdī ed-Dâliyeh*, Annual of the American Schools of Oriental Research 41, Cambridge, MA: American Schools of Oriental Research.

——(1994) "The Paleographical Dates of the Manuscripts" in J.Charlesworth (ed.) *The Dead Sea Scrolls: Hebrew, Aramaic, and Greek Texts with English Translations*, vol. 1: *Rule of the Community and Related Documents*, Tübingen: Mohr/Louisville: Westminster/John Knox.

Danby, H. (1933) *The Mishnah*, Oxford: Oxford University Press.

de Vaux, R. (1965) *Ancient Israel*, vol. 1: *Social Institutions*, New York/ Toronto: McGraw-Hill.

——(1973) *Archaeology and the Dead Sea Scrolls*, The Schweich Lectures of the British Academy, London: Oxford University Press.

Eisenman, R. and Wise, M. (1992) *The Dead Sea Scrolls Uncovered*, Shaftesbury: Element.

Epstein, A. (1891) “Le Livre des Jubilés, Philon et le Midrasch Tadsché”, *Revue des Etudes Juives* 21: 1–25.

Fitzmyer, J.A. and Harrington, D.J. (1978) *A Manual of Palestinian Aramaic Texts (Second Century B.C.—Second Century A.D.)*, Bib et Or 34, Rome: Pontifical Institute Press.

García Martínez, F. (1993–94) “Dos notas sobre 4QMMT”, *Revue de Qumran* 16: 293–7.

——(1994) *The Dead Sea Scrolls Translated*, Leiden: Brill.

——(1996a) “Calendarios en Qumran (I)”, *Estudios Biblicos* 54: 327–48.

——(1996b) “Calendarios en Qumran (II)”, *Estudios Biblicos* 54: 523–52.

Glessmer, U. (1991) “Der 364-Tage-Kalender und the Sabbatstruktur seiner Schaltungen in ihrer Bedeutung für den Kult”, in D.R.Daniels, U.Glessmer, and M.Rösel (eds) *Ernten, was man sät: Festschrift Klaus Koch zu seinem 65. Geburtstag*, Neukirchen-Vluyn: Neukirchener Verlag.

——(1995) *Die ideale Kultordnung: 24 Priesterordnungen in den Chronikbüchern, den kalendarischen Qumrantexten und in synagogalen Inschriften*, Habilitationsschrift, Universität Hamburg.

——(1996) “The Otot-Texts (4Q319) and the Problem of Intercalations in the Context of the 364-Day Calendar”, in H.-J.Fabry, A.Lange, and H.Lichtenberger (eds) *Qumranstudien: Voträge und Beiträge der Teilnehmer des Qumranseminars auf dem internationalen Treffen der Society of Biblical Literature, Münster, 25.–26. Juli 1993*, Schriften des Institutum Judaicum Delitzschianum 4, Göttingen: Vandenhoeck & Ruprecht.

Gordis, R. (1966) “A Document in Code from Qumran”, *Journal of Semitic Studies* 11: 37–39.

Holladay, W. (1986) *Jeremiah 1: A Commentary on the Book of the Prophet Jeremiah Chapters 1–25*, Hermeneia, Philadelphia: Fortress.

Hollander, H. and de Jonge, M. (1985) *The Testaments of the Twelve Patriarchs: A Commentary*, Studia in Veteris Testamenti Pseudepigrapha 8 , Leiden: Brill.

Hughes, J. (1990) *Secrets of the Times: Myth and History in Biblical Chronology*, Journal for the Study of the Old Testament Supplements 66, Sheffield: Journal for the Study of the Old Testament Press.

Japhet, S. (1993) *I & II Chronicles*, Old Testament Library, Louisville: Westminster/John Knox.

Jaubert, A. (1953) “Le calendrier des Jubilés et de la secte de Qumrân: Ses origines bibliques”, *Vetus Testamentum* 3: 250–64.

——(1954) “La date de la dernière cène”, *Revue de l’Histoire des Religions* 146: 140–73.

——(1957) “Le calendrier des Jubilés et les jours liturgiques de la semaine”, *Vetus Testamentum* 7: 35–61.

——(1957) *La date de la cène: calendrier biblique et liturgie chrétienne*, Études bibliques, Paris: Gabalda.

——(1965) *The Date of the Last Supper*, trans. I.Rafferty, Staten Island, NY: Alba.

Knibb, M. (1978) *The Ethiopic Book of Enoch*, 2 volumes, Oxford: Clarendon.

Kobelski, P. (1981) *Melchizedek and Melchireša* , Catholic Biblical Quarterly Monograph Series 10, Washington, DC: Catholic Biblical Association of America.

Liver, J. (1968) *Chapters in the History of the Priests and Levites: Studies in the Lists of Chronicles and Ezra and Nehemiah*, Jerusalem: Magnes Press (Hebrew).

Milik, J.T. (1956) “Le travail d’édition des fragments manuscrits de Qumran”, *Revue Biblique* 63: 49–67.

——(1957) “Le travail d’édition des manuscrits du désert de Juda”, in *Volume du Congrès Strasbourg 1956*, Supplements to Vetus Testamentum 4, Leiden: Brill.

——(1957) *Dix ans de Découvertes dans le Désert de Juda*, Paris: Les Éditions du Cerf.

——(1959) *Ten Years of Discovery in the Wilderness of Judaea*, trans. J.Strugnell, London: SCM Press, Ltd.

——(1972) “Milkî- edeq et Milkî-reša ” dans les anciens écrits juifs et chrétiens”, *Journal of Jewish Studies* 23: 95–144.

——(1976) *The Books of Enoch: Aramaic Fragments of Qumrân Cave 4*, Oxford: Clarendon Press.

Miller, J.M. and Hayes, J.H. (1986) *A History of Ancient Israel and Judah*, Philadelphia: Westminster.

Murphy-O’Connor, J. (1976) “Demetrius I and the Teacher of Righteousness”, *Revue Biblique* 83: 400–20.

Neugebauer, O. (1985) “The ‘Astronomical’ Chapters of the Ethiopic Book of Enoch (72–82)” in M.Black, *The Book of Enoch or 1 Enoch*, Leiden: Brill.

Newsom, C. (1985) *Songs of the Sabbath Sacrifice: A Critical Edition*, Harvard Semitic Studies 27, Atlanta: Scholars Press.

Oulton, J.E.L. (1930) *Eusebius: The Ecclesiastical History*, Loeb Classical Library, London: Heinemann/Cambridge, Harvard University Press.

Porten, B. (1990) “The Calendar of Aramaic Texts from Achaemenid and Ptolemaic Egypt”, in S.Shaked and A.Netzer (eds) *Irano-Judaica II*, Jerusalem: Ben-Zvi Institute.

Qimron, E. and Strugnell, J. (1994) *Qumran Cave 4. V: Miq at Ma aśe Ha-Torah*, Discoveries in the Judaean Desert 10, Oxford: Clarendon.

Reeves, J.C. and Kampen, J. (eds) (1994) *Pursuing the Text: Studies in Honor of Ben Zion Wacholder on the Occasion of his Seventieth Birthday*, JSOT Supplement Series 184, Sheffield: Sheffield Academic Press.

Roitman, A. (1997) *A Day at Qumran: The Dead Sea Sect and Its Scrolls*, Jerusalem: The Israel Museum.

Sachau, E. (1879) *The Chronology of Ancient Nations*, London.

Sanders, J. (1965) *The Psalms Scroll of Qumran Cave 11 (11QPs^{a})*, Discoveries in the Judaean Desert 4, Oxford: Clarendon.

Schiffman, L. (1996) “The Place of 4QMMT in the Corpus of Qumran Manuscripts” in J.Kampen and M.J.Bernstein (eds.), *Reading 4QMMT: New Perspectives on Qumran Law and History*, Society of Biblical Literature Symposium Series 2, Atlanta: Scholars Press.

Schürer, E. (1973) *The History of the Jewish People in the Age of Jesus Christ (175 B.C.—A.D. 135)*, vol. 1, revised and edited by G.Vermes and F.Millar, Edinburgh: Clark.

Stegemann, H. (1965/1971) *Die Entstehung der Qumrangemeinde*, unpublished Ph. D.dissertation, Bonn, 1965, privately published, 1971.

Talmon, S. (1951) “Yom Hakkippurim in the Habakkuk Scroll”, *Biblica* 32: 549–63.

——(1958) “The Calendar Reckoning of the Sect from the Judaean Desert”, in C.Rabin and Y.Yadin (eds) *Aspects of the Dead Sea Scrolls*, Scripta Hierosolymitana 4, Jerusalem: Magnes.

——and Knohl, I. (1995) “A Calendrical Scroll from a Qumran Cave: *Mišmarot* B[a], 4Q321”, in D.P.Wright, D.N.Freedman, and A.Hurvitz (eds) *Pomegranates and Golden Bells: Studies in Biblical, Jewish, and Near Eastern Ritual, Law, and Literature in Honor of Jacob Milgrom*, Winona Lake, IN: Eisenbrauns.

Tantlevskij, I. (1995) “The Two Wicked Priests in the Qumran Commentary on Habakkuk”, Appendix C of *The Qumran Chronicle* 5: 1–39.

Thackeray, H. St. J. (1927) *Josephus II The Jewish War Books I-III*, Loeb Classical Library, London: Heinemann/Cambridge: Harvard.

VanderKam, J. (1979) “The Origin, Character, and Early History of the 364-Day Solar Calendar: A Reassessment of Jaubert’s Hypotheses”, *Catholic Biblical Quarterly* 41: 390–411.

——(1981) “2 Maccabees 6, 7A and Calendrical Change in Jerusalem”, *Journal for the Study of Judaism*, 12: 52–74.

——(1984) *Enoch and the Growth of an Apocalyptic Tradition*, Catholic Biblical Quarterly Monograph Series 16; Washington, DC: Catholic Biblical Association of America.

——(1989) *The Book of Jubilees*, Corpus Scriptorum Christianorum Orientalium 510–11, Scriptores Aethiopici 87–88, Leuven: Peeters.

——and Milik, J. (1994) “Jubilees”, in *Qumran Cave 4 VIII: Parabiblical Texts Part I*, Discoveries in the Judaean Desert 13, Oxford: Clarendon.

——(1994) “Calendrical Texts and the Origins of the Dead Sea Scroll Community”, in M.Wise, N.Golb, J.Collins, and D.Pardee (eds) *Methods of Investigation of the Dead Sea Scrolls and the Khirbet Qumran Site*, Annals of the New York Academy of Sciences 722, New York: New York Academy of Sciences.

——(1997) “The Calendar, 4Q327, and 4Q394”, in *Legal Texts and Legal Issues: Second Meeting of the IOQS, Cambridge 1995*, Studies on the Texts of the Desert of Judah 23, Leiden: Brill, 179–94.

Vermes, G. (1995) *The Dead Sea Scrolls in English*, 4th edition, London: Penguin.

Wacholder, B.Z. and Abegg, M.G. (1991) *A Preliminary Edition of the Unpublished Dead Sea Scrolls: The Hebrew and Aramaic Texts from Cave Four*, fascicle 1, Washington, DC : Biblical Archaeology Society.

Westermann, C. (1984) *Genesis 1–11: A Commentary*, trans. J.Scullion, Minneapolis, Augsburg.

Wise, M. (1994) ‘Observations on New Calendrical Texts from Qumran,’ in his *Thunder in Gemini*, Journal for the Study of the Pseudepigrapha Supplements Series 15, Sheffield: Sheffield Academic Press.

——(1994) ‘Second Thoughts on פלגand the Qumran Synchronistic Calendars,’ in J.C.Reeves and J.Kampen (eds) *Pursuing the Text: Studies in Honor of Ben Zion Wacholder on the Occasion of his Seventieth Birthday*, Journal for the Study of the Old Testament Supplement Series 184, Sheffield: Sheffield Academic Press.

——, Abegg, M, and Cook, E. , eds (1996) *The Dead Sea Scrolls: A New Translation*, San Francisco: Harper, San Francisco.

——(1997) ‘To Know the Times and Seasons: A Study of the Aramaic Chronograph 4Q559,’ *Journal for the Study of the Pseudepigrapha* 15: 3–51.

Yadin, Y. (1977/1983) *The Temple Scroll*, 3 volumes, Jerusalem: Israel Exploration Society.

INDEX OF SUBJECTS

Aaron 67, 72–3
Aaron, sons of 105
Abegg, M.G. 85, 120, 121, 123
Abra(ha)m 33, 55, 100, 102
Al-Biruni 53
Albani, M. 73, 79, 82, 88, 89–90, 120, 121, 122
Albright, W.F. 11
Animal Apocalypse 100–1, 104, 108
Antiochus IV 32, 34, 96, 114
Apocalypse of Weeks 99–100, 104, 108
Aristobulus 39–40
astrological texts 87–9, 112
Astronomical Book of Enoch 17–27, 28–30, 32, 33, 64, 88, 111, 116, 121

Babylonian calendar 15–16, 60
Baillet, M. 69–70, 119, 122
Barthélemy, D. 53, 78, 119
Baumgarten, J. 118, 119
Belial 103, 106
Bickerman, E.J. 118
Boethusians 63
Booths, Festival of 6, 10, 13–14, 33, 34, 64, 66, 68, 71, 77–8

Charles, R.H. 31, 117, 118
chronology of biblical events 91–109
Clines, D.J.A. 14
Cogan, M. 123
Collins, J. 114, 123
Cook, E. 123
Covenant 30
Creation 3–4, 12, 17, 20, 25, 74, 79, 110, 112
Cross, F.M. 16, 81, 121
Cyrus 96

Danby, H. 38, 118
David 6–7, 63–4, 72, 92
day, beginning of 4, 12–13, 33, 47, 60, 117
Day of Atonement 10, 13, 33, 44–5, 48, 62, 64, 68, 71, 77–8, 103–4, 116
Day of Remembrance 68, 77–8
Day of the Trumpet 10
days of consecration 67

de Jonge, M. 123
de Vaux, R. 89, 113, 117
Didascalia 57
divination 87–9, 112
Dupont-Sommer, A. 45 *duqah (dwqh)* 85

Egyptian calendar 16, 60
Eisenman, R. 122
Elephantine papyri 15–16
Enoch 28, 29, 99, 100
Epiphanius 57
Epstein, A. 31, 118
Exile, length of 94–5

festivals 4, 6–7, 10–11, 13–14, 26–8, 30–3, 38, 44, 47–8, 54, 56, 64, 71–2, 77–8, 110, 112
Fitzmyer, J.A. 118
flood narrative 4–5, 9, 29–30, 32, 56, 65

García Martínez, F. 80, 81, 118, 120, 121, 122
Gezer Calendar 11
Glessmer, U. 82–4, 89–90, 118, 121, 122
Gordis, R. 89
Grintz, Y. 63

Hanukkah 34, 72
Harrington, D.J. 118
Hayes, J.H. 123
Hezekiah 7, 34, 38
Holladay, W. 123
Hollander, H.W. 123
Hughes, J. 92–3, 123
Hyrcanus II 86
Hyrcanus, John 65, 113

intercalation 33, 36–40, 47, 80, 82–4, 111

Japhet, S. 73
Jaubert, A. 54–8, 113, 119
Jeremiah 14, 94, 108
Jerusalem, destruction of 9, 14, 92, 98, 101
Jonathan (the Maccabee) 115–16
Josephus 34, 39–40, 73, 78
Jubilee periods 14, 28, 32–3, 81–2, 94, 100, 102–9, 121
Judas Maccabeus 100, 115
Julius Africanus 39

Kittim 86
Knibb, M. 117
Knohl, I. 84–5, 118, 122

Kobelski, P. 123

Last Supper 54, 57–8
Liver, J. 49
lunar month 5, 38, 60, 79, 84–5
lunar calendar 5, 19–20, 25, 32–3, 38, 56, 59–60, 69, 74, 80, 111, 114, 118, 121

Macalister, R.A.S. 11
Melchizedek 102–4
memorial days 29–30, 32, 47, 78
Metonic system 39
Milik, J.T. 17–20, 58–60, 69, 74, 76, 81–2, 104, 105, 117, 120, 121, 122, 123
Miller, J.M. 123
Mishnah 14, 31, 34
month, length of 5, 22, 25, 31
month names 8–10, 15, 16, 34, 35
moon 4, 5–7, 18–27, 36–8, 76, 88, 111, 121
Moses 27, 30, 65, 101
Murphy-O'Connor, J. 115
mw'dym 4, 44, 45

new moon 5, 6–7, 19, 36–8, 111
New Oil, Feast of 66, 68–9, 72, 75–6 78
New Wine, Festival of 68–9, 72, 75, 78
new year 5, 8, 11, 13–14, 22, 47, 53, 68
Neugebauer, O. 21–6, 117
Noah 4, 29–30, 65

omer-waving ceremony 10–11, 31, 53, 55, 58, 61, 67, 69, 71, 77–8
Oulton, J.E.L. 118

Passover 6, 9, 10, 13, 14, 16, 26, 27, 31, 33, 39–40, 46, 57–8, 64, 67, 71, 77–8, 122
Passover Letter 16
Pentecost *see* Weeks, Festival of Philo 39–40
Porten, B. 15
priestly divisions (mishmarot) 49, 58–9, 61, 72–4, 77–86, 112, 119, 120, 121
Purim 10, 39, 72

Qimron, E. 75, 119
Qumran origins 113–16

Roitman, A. 90
royal birthday 114–15

Sabbath 7, 13, 26, 28, 32, 33, 48, 55 61–2, 114
Sabbath offering 66
Sabbatical cycle 14, 81–2, 93–4, 121
Sachau, E. 53
Salome, Alexandra 86–7

Samaria papyri 16
Sanders, J. 63
Scaurus, M. Aemilius 87
Schechter, S. 43
Schiffman, L. 120
Schürer, E. 118
solar calendar 5, 7–8, 18, 22, 25, 27, 33, 38, 44, 50, 53, 54, 56, 58, 60, 63–5, 69, 74, 76, 77, 80, 82–5, 111–12, 113
Solomon 8–9, 14, 64, 72, 91, 92
stars 20–1, 25–7
Stegemann, H. 115
Strugnell, J. 75, 105, 119
sun 4, 7–8, 18–27
sundial 89–90

Tabernacles, Festival of (*see* Booths, Festival of)
Talmon, S. 45, 52–3, 60–3, 84–5, 113, 118, 119, 122
Tantlevskij, I. 98–9
Teacher of Righteousness 44–5, 52, 62, 98–9, 115–6
Thackeray, H. St. J. 118

Unleavened Bread, Festival of 6, 8, 10, 13, 16, 31, 33, 64, 66, 67, 71

VanderKam, J.C. 58, 82, 86, 115, 117, 119, 120, 122, 123
Vermes, G. 118

Wacholder, B.Z. 85, 120, 121
Weeks, Festival of 10–11, 13, 30–2 33, 53, 54–5, 58, 64, 66, 67–9, 71–2, 75, 77–8
Westerman, C. 117
Wicked Priest 44–5, 52, 62, 116
Wise, M. 85, 97, 122, 123
Wood Offering, Festival of the 68, 72

Yadin, Y. 65–9, 76

Zodiac 88

INDEX OF REFERENCES TO BIBLICAL AND OTHER ANCIENT LITERATURE

OLD TESTAMENT

Hebrew Bible
Genesis 65, 101
1 3, 5, 6, 12, 27, 79
1:1–2:4a 3
1:14 28, 81
1:14–19 3, 53, 79
1:16 22
5:5 102
5:21–4 28, 121
7:6 4
7:11 4
7:24 4
8:3 4
8:4 4
8:5 4
8:13 4
8:14 30
9:1–17 30
10 101
14 102
15:13 91
15:13–14 97
15:16 91
Exodus 65, 93, 101
12:2 8, 14
12:6 77
12:18 13
12:40 14, 97
12:40–1 91
13:4 8
19:1 30

20 27
23:10–19 10
23:11 94
23:15 8
23:16 13, 30
23:17 11
29 67
29:38–42 119
29:39 12
34:18–26 10
34:22 13, 30
Leviticus 93
8 67
11:24–8 13
15:1–12, 16–24 13
22:1–9 13
23 10, 14, 64, 78
23:3 10
23:6 56
23:9–14 10
23:9–16 31
23:11 31
23:15–16 31, 61
23:23–5 8
23:24 7
23:27 13
23:32 13
25 29, 102
25:4 94
25:9–10 104
25:10 94
25:11–12 94
25:13 103
Numbers
9:1–14 10
19:7 13
19:8, 10 13
28–9 10, 14, 66, 78
28:3–8 10, 66, 119
28:4 13
28:8 66
28:9–10 10, 66
28:11–15 7, 10
29:1 68
29:1–6 8
Deuteronomy 93
6:7 62
15 102
15:2 103
16:1–3 8
16:1–17 10
28:67 12

32:8 101
1 Samuel
13:1 92
20:5 6
20:12 6
20:18–19 6
20:24–5 6
20:26 6
20:28 6
20:34 7
20:35 7
30:12 12
1 Kings
2:11 92
4:32 64
6:1 8, 14, 91, 97
6:37 8
6:38 8
8:2 8
11:42 92
12:32–4 52
2 Kings
4:23 7
20:1 7
20:9–11 8
25 9
Isaiah
1:13–14 7
28:19 12
30:26 22, 23, 62
38:7–8 8
61:1 103
61:1–2a 94
61:3 103
Jeremiah
25 101
25:11 95
25:11–12 95
29:10 95
33:20 12
52 9
Ezekiel 56
8:1 56
30:20 56
46:1–3 7
Hosea
2:11 7
Amos
2:5 7
Habakkuk
2:15 44
Zechariah

1:7 10
7:1 9
Psalms
81:3, 5 6
91:5–6 12
104:19 6
110:4 103
121:6 12
Esther 38, 72
2:16 10
3:7 9, 10
3:13 10
4:16 12
8:9 9
8:12 10
9:1, 15, 17, 19, 21, 10
Daniel 95, 99
7:25 32, 114
8:14 12
9 14, 29, 104, 106, 108
9:1–19 96
9:24–7 96
9:25 14
Ezra 56
6:15 10
Nehemiah 56
1:1 9
2:1 9
6:15 9
10:34 68, 72
13:19 13
1 Chronicles 61
16:40 12
23:30 12
24 77, 81, 84
24:1–6 72
24:7–18 49, 59, 72, 73, 74, 119
24:19 73
25 73
2 Chronicles
3:2 56
29 34
36:20–1 95
Deuterocanonical or apocryphal books
1 Maccabees 34
1:45 114
1:59 114
4 93
4:36–59 34
6:49 94
6:53–4 94
10:32, 38 115

2 Maccabees 34
1:9 34
6:6 114
6:7 114, 115
10:8 34
Sirach 27, 56
43:2–5 27
43:6–7 27
50:6 27

NEW TESTAMENT

Matthew
26:17–19 57
Mark
14:12–16 57
Luke
4:18–19 94
22:7–15 57
John
18:28;
19:14, 36 57
2 Corinthians
11:25 12
Hebrews 103

OLD TESTAMENT PSEUDEPIGRAPHA

1 Enoch 54, 65, 75, 76, 111
10:12 108
72 20, 22, 23, 26
72–3 62
72–82 17, 29, 32, 74, 121
72:1 20
72:2–5 20
72:5 22
72:6–32 21
72:8–12 21
72:13 22
72:33–6 22
72:37 22
73 24, 26, 70
73:1 22

73:2 22
73:3 23, 24
73:4–6 23
73:4–8 23
74 26
74:1 24
74:2 24
74:5–8 24
74:7–8 24
74:10–11 25, 117
74:10–17 19, 25, 117
74:11 25
75 26
75:1–2 25
76 26
78 26
78–9 70
79 26
79:3–5 19
80:2–8 26
82:4–7 26
85–90 100
89:12 100
89:59ff. 101
89:72 101
90:1 101
90:5 101
90:17 101
90:25 101
91:11–17 99
93:1–10 99
2 Enoch 56
Jubilees 5, 26, 27–33, 34, 47–8, 53, 54–6, 58, 62, 65, 67, 75, 76, 78, 101–2, 108, 111
1:10 28
1:14 28
1:26–9 27
2:9 28
4:17 28
4:17–25 28
4:18 28, 121
4:21 28, 121
5:22–6:1 29
6:10–22 30
6:23 29, 32
6:23–9 118
6:24–7 29, 32
6:28–9 30
6:29–30 33
6:30 30, 64
6:32 30
6:32–8 30
6:35b–7 32

15:1 31
16:20–31 33
18 33
18:18–19 33
32:10–14 69
34:17–19 33
44:4–5 31
50:1–5 102
50:12 55
Testament of Levi
16–17 106–7, 108
16:1–2 107
17:1–2a 107
17:8–11 107
18:1 108

QUMRAN LITERATURE

Damascus Document (CD) 43–4, 47–8 61, 104, 111
1 108
1:5–11 98
1:10–12 99
1:11–12 99
3:14–15 48
6:17–19 52
6:18–19 48
10:14–15 62
12:3–6 48
16:2–4 47, 53
20 108
20:13–15 98
Genesis Apocryphon 43
Hymn Scroll (IQH) 43–4, 50–1, 116
20[12]:4–9 50
Pesher Habakkuk (1QpHab) 43–5, 62, 116
11:4–8 44
Psalms Scroll (11QPs[a]) 111
27:2–11 63
Rule of the Community (1QS) 43–4, 45–7, 61
1:8–9 45
1:13–15 45, 53
3:9–10 46
9:26–10:8 47
10:13–14 47, 62
Songs of the Sabbath Sacrifice 111
Temple Scroll 31, 65–9, 75–6, 78, 119
11:9–13 66 13–29 66

13:10–17 66
13:15 66
13:17 66
13:17–14:7 66
14:7–17:4 66
14:9 66
15:3–17.4 67
15:4, 14 67
15:15–17 67
17:6 67
17:6–9 67
17:10 67
17:10–16 67
17:12 67
18:2–10 67
18:10–13 67
18:10–19:9 67
19:9 67
19:11–14 68
19:11–21:10 68
21:12–23:2 68
25:3 68
25:3–10 68
23:3–25:1 68
25:7 68
25:10–27:10 68
27:10 68
27:10–29:1 68
43:4–9 69
War Scroll 43–4, 48–50, 61
1QM 2:1–6 49
1QM 2:2 74
1QM 10:15 48
4QM[d] 1 49
4QM[f] ii 7 49
4QCommentary on Genesis A (4Q252) 111
2:2–3 65
4QEnastr[a] 17–19
4QEnastr[b] 17–19
7 ii 6–8 19
7 iii 1–2 19
4QEnastr[c] 17–18
4QEnastr[d] 17–18
4QMMT 58, 75, 116 20–1 65
4Q180
frg. 1:1–4 104
4Q181
frg. 2:3 104
4Q186
frg 1 ii 5–8 88
4Q259 81–2, 121
4Q266

2 i 2 118
4Q317 76
1 ii 2–14 120
4Q318
frg. 1 5 88
frg. 1 8 122
frg. 1–2 ii 6 88
frg. 2 ii 6 88
4Q319 80–4, 111, 121
4:17 121
5:11–14 81
6:5–6 121
6:6 122
6:12–13 82
6:13 122
7:8 122
7:17–18 122
4Q320 77–80, 85
1 i-iii 80
1 i 1–5 79
1 i 6–10 80
1 iii 13–14 121
2 i 2–5 79
4 ii 10–14 80
4 iii 1–9 77
4Q321 84–6, 122
1:1–4:8 84
1:6–7 85
4:8–9 85
4Q321a 86
4Q322 86
4Q323 86
4Q324 86
4Q324a 87
4Q324b 87
4Q324c 87
4Q325 87
4Q326 87
4Q327 69, 75–6, 120
1 ii 2–5 75
5:2–5 68
4Q328 87
4Q329 87
4Q329a 87
4Q330 87
4Q335–6 122
4Q337 122
4Q365a 119
4Q385
36 i 3–4 105
4Q387
1 9 105

3 ii 1–6 105
4Q390
1 5–6 106
1 7–8 106
2 1 106
2 4–5 106
4Q394 75, 120
4Q400
1 i 1 65
4Q503 69–70
4Q559 97, 123
4Q561 88
6Q17 122
11QMelch 108
2:6–8 103
2:7–8 104
2:20 103
2:25 104
frg. 11 104

RABBINIC LITERATURE

Megillat Ta‘anit 35
m. Arakhin
2.2 38
9.3 38
m. Baba Metzia
8.8 38
m. Eduyoth
7.7 39
m. Megillah
1.4 38
m. Nedarim
8.5 38
m. Pesahim
8.4 38
m. Rosh Ha-Shanah
1.4 37, 38
1.5 37
1.8 37
1.9 37
2 52
2.1 37
2.2 38
2.3 38
2.5 36
2.6 37

2.7 36
3.1 36
4.4 37
m. Sanhedrin
1.2 36
m. Yebamoth
16.7 38
b. Pesahim
56a 38
b. Sanhedrin
11a 40
11b 40
b. Rosh Ha-Shanah
25ab 52
y. Rosh Ha-Shanah
1.56d 9

OTHER LITERATURE

Josephus, *Antiquities*
3.10.5 40
7.14.7 73
Josephus, *War*
2.8, 5 47
Eusebius, *Demonstration of the Gospel*
viii.2, 54, 39
Eusebius, *History of the Church*
vii.32, 6 39
vii.32, 16–19 39
vii.32, 17 40